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Bonn zoological Bulletin

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Editorial

The first part of the present issue of the Bonn zoological Bulletin is an obituary to Dr. Jürgen Haffer, member of the journal's Advisory Board. Jürgen Haffer was well-known for his contributions to the fields of biogeography and ornithology, visited the ZFMK regularly, and joined the BzB Board in 2002. From the journal's perspective, we will miss especially his valuable input as an Advisory Board member.

In times of increasing demands on scientists for publishing quantities of research papers, comparatively few journals remain available publishing sound extensive or even monographic work in the fields of taxonomy, systematics and evolution, or biodiversity and biogeography. The "Bonner zoologische Monographien" ("Bonn zoological Monographs") was such a series, publishing monographic work since 1971. Efforts for maintaining two scientific journals in parallel are however substantial, and the step of including the "Monographs" into BzB is consequent. From 2012, a regular "Supplement Series" will publish comprehensive single papers, monographs and theme issues, in addition to the two annual volumes of BzB. I am delighted to announce that Thomas Wesener, curator for millipedes (Myriapoda) at ZFMK, will be in charge as "Managing Editor BzB Supplement Series" from 2012. I am convinced that the Supplement Series will contribute to further developing the journal's profile and enhancing its visibility. A warm "welcome on board" to Thomas!

Besides the upcoming "Supplement Series", readers might realize other changes indicating that BzB is "evolving". The present issue is the first one coming in a slightly revised text layout, aimed at a more efficient use of the print space and a clearer presentation of its contents. I thank the members of the Editorial Board for their valuable input, Eva-Maria Levermann for her professional layout work, and Michelle Clemens and Serkan Güse for formatting support.

"An inordinate fondness for beetles" is said to have been J.B.S. Haldane's (1892–1964) response when theologians asked what one could conclude on the nature of the creator from the study of his creation (Hutchinson 1959, Am Nat 93 (870), p. 146). This classic statement of the famous geneticist and evolutionary biologist Haldane refers to the sheer species diversity of beetles, constituting more than 40 % of all insect species in the world. The present issue of BzB contains four papers dealing with beetle taxonomy, including the descriptions of altogether 25 species (Ahrens; Ahrens & Fabrizi; Yoshitomi & Putra) and one genus (Wagner) new to science. In line, the cover illustration of this issue shows the holotype of Serica pelelaensis, a small beetle from Bhutan described herein.

A careful study of literature mostly from the late 18th to the early 19th century shows that taxonomic surprises are not restricted to the discovery of numerous or spectacular species new to science. In this issue, Schmidtler & Böhme demonstrate that the Common or Viviparous Lizard has been formally described for the first time by Lichtenstein (1823), not by von Jacquin (1787) as has been presumed for more than 200 years; nevertheless, the scientific name of this extraordinarily widely distributed, viviparous lizard was preserved. Further contributions focus on the description and illustration of preimaginal stages of the African monkey-moth species Striphnopteryx edulis (Pugaev et al.), first records of odonatans from the caldera of an active Galapágos volcano (Lambertz et al.) and Bonn (Lambertz & Schmied), and discuss the distribution area and possible range extension of the Northwestern Alligator Lizard Elgaria coerulea principis in Canada (Lambertz & Graba).

With best wishes to all readers, authors and "BzB-team" members,

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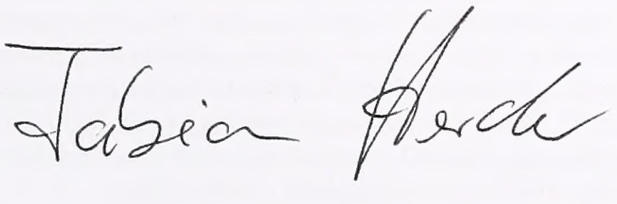
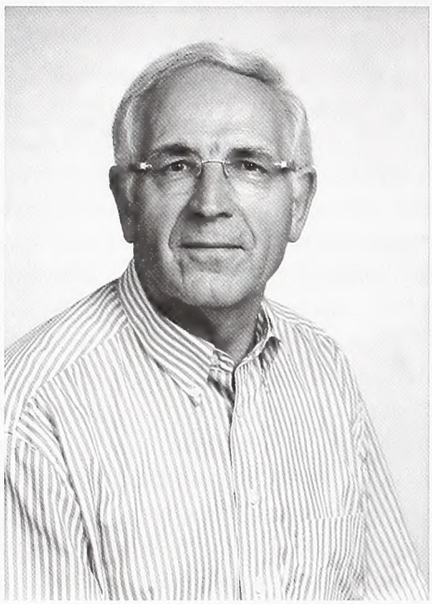


Fabian Herder (Editor-in-Chief, Fish Curator at ZFMK)
Bonn, December 2011

Obituary to Jürgen Haffer, Zoologisches Forschungsmuseum Alexander Koenig

* December, 9th 1932 in Berlin
† April, 26th 2010 in Essen



On April 26th, 2010, Jürgen Haffer, a long term guest and research associate at Museum Koenig, as well as member of the Advisory Board of the Bonn zoological Bulletin, died of cancer. His theories on refugial speciation in Amazonian birds, driven by paleoclimate cycles during the Pleistocene, were partly published in the institutional journals and stimulated intense academic debates from my first day as bird curator at ZFMK in 1974.

Jürgen Haffer was born on December 9th, 1932 in Berlin as the fourth child of Margarete and Oskar Haffer. He became interested in ornithology early in his life, studied biology, paleontology and geology in Göttingen, graduated with a diploma in 1956, and completed his dissertation in 1957. Three obituaries describe his life in detail (Vogelwarte 48: 300–301; Ibis 152: 867–868; Anzeiger des Vereins Thüringer Ornithologen 7: 143–150).

Despite of his doctoral degree in geology and his employment with Mobil Oil in Colombia, birds remained his major interest and passion. Between 1958 and 1967, bird observations and an intense analysis of birds he had collected "...during the course of geological field work as professional duties permitted", Haffer recognized conspicuous distribution patterns and postulated the hypothesis of distribution centers that acted as centers of faunal differentiation and dispersal. These centers are thought to have acted as refugia for Amazonian forest bird species during dry climatic periods in the Pleistocene, and led to rapid local speciation. For his biogeographical works on Neotropical birds, Jürgen Haffer received the Brewster Award by the American Ornithologist Union (AOU) in 1975. His profession led him to several places in the world, including the USA, Iran, Egypt and Norway, where he continued his analyses of bird speciation. His publication on "Species concepts in Ornithology" awarded him the Ornithology Prize of the German Ornithological Society (DO-G) in 1999.

After an early retirement in 1988, Jürgen Haffer had time to enforce his scientific ornithological activities. He was invited for writing the generic accounts of passerines for the "Handbuch der Vögel Mitteleuropas" and to supervise systematic and taxonomic issues in this series, an occupation that lasted for a period of 20 years until 2007. His publication list comprises about 150 scientific articles and some 50 book reviews (For a complete reference list of Jürgen Haffer see Anzeiger des Vereins Thüringer Ornithologen 7: 145–150).

His numerous presentations at meetings of ornithological societies and other conferences were always appreciated and are still well remembered. He received several international honors and was Corresponding Member of the DO-G since 1973, Corresponding Fellow of the AOU since 1989, Honorary Member of the DO-G (1993), Honorary Member of the Neotropical Ornithological Society (2000), and Honorary Member of the Linnean Society of New York (2004). The death of Jürgen Haffer came suddenly and unexpected. Ornithology has lost a scientist with an international reputation and an excellent expert in the field of history of ornithology. He was always a welcomed guest at our institution; we will miss an open minded, friendly, polite and cultivated visitor.

Renate van den Elzen

Bonn zoological Bulletin 60 (2): 117–138 December 2011

A revision of the genus *Archeohomaloplia* Nikolajev, 1982 (Coleoptera: Scarabaeidae: Sericini)

Dirk Ahrens

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Abstract. The present paper gives a review of the species so far assigned to the genus *Archeohomaloplia* Nikolajev, 1982. The neotypes of *Archeohomaloplia potanini* Nikolajev, 1982 and *A. medvedevi* Nikolajev, 1982 are designated. Ten new species are described from China and Myanmar / Thailand: *Archeohomaloplia acuta* sp. n., *A. frolovi* sp. n., *A. ganhaiziensis* sp. n., *A. hebashana* sp. n., *A. kalabi* sp. n., *A. mingi* sp. n., *A. nikolajevi* sp. n., *A. safraneki* sp. n., *A. taunggyiensis* sp. n., *A. yaregongensis* sp. n. The genitalia of the new and the already known species are figured and the distribution of the species is illustrated. A key to the species is given.

Key words. Taxonomy, chafer beetles, China, Indochina.

INTRODUCTION

The genus *Archeohomaloplia* Nikolajev, 1982 was erected by Nikolajev (1982) mainly based on its differences to the genus *Omaloplia* Schoenherr, 1817, such as the antenna composed by ten antennomeres (instead of nine). Originally it included only two species (*A. potanini* Nikolajev, 1982 and *A. medvedevi* Nikolajev, 1982), while subsequently a third species of a recently erected genus *Melanomaladera* Miyake & Yamaya, 2001, *M. yunnana* Miyake & Yamaya, 2001, was assigned as well to *Archeohomaloplia* (Ahrens 2007). In the same work *A. potanini* Nikolajev, 1982 was synonymized with the senior name, *Homaloplia abbreviata* Fairmaire, 1897.

Although both genera being not the only ones with a margined pronotal base among the Sericini, their similarity in external appearance is quite notable compared to all other Palearctic Sericini. However, genital morphology of males reveals striking differences between both making it unlikely that both would be sister taxa. Shared characters between the two genera all have been identified by Ahrens (2006) as plesiomorphic character states within basal Sericini (e.g. hypomeron simple, pronotal basis with marginal line) – thus the systematic position and the taxonomic status of *Archeohomaloplia* is still to explore in more detail.

In the present work I examine all known representatives of *Archeohomaloplia* that fit to the group diagnostics sent to me for determination from the vast material of numerous European and North American museums as well as private collections. All specimens originate from the Eastern Tibetan Plateau region or the mountains of Indochina, areas which have not been studied so far more comprehensively. Ten new species have been discovered in that material and are described herein, previously described species are shortly reviewed and additional faunistic records are given.

MATERIAL AND METHODS

The principal terminologies and methods used for measurements, specimen dissection and genital preparation are described in detail in Ahrens (2004). The examined material is cited with the original label contents given in quotations, multiple labels are separated by a "/". Male genitalia were glued on a small pointed card and photographed in both lateral and dorsal view with a stereomicroscope Zeiss Discovery .V20 combined with a Zeiss AxioCam HRC digital camera. Using Automontage software a number of single focussed images were combined in order to obtain an image that was in focus throughout. The resulting images were subsequently digitally edited.

COLLECTION MATERIAL DEPOSITORIES

CA D. Ahrens collection, ZFMK Bonn (Germany);
CK D. Král collection, Prague, now NMPC (Czech Republic);
CP P. Pacholátko collection, Brno (Czech Republic);
MNHN Museum national d'Histoire naturelle, Paris (France);
NHMB Naturhistorisches Museum, Basel (Switzerland);
NMMC Municipal Museum, Nagaoka (Japan);
NMPC National Museum Prague (Natural History) (Czech Republic);
USNM National Museum of Natural History, Washington D.C. (U.S.A.);
ZFMK Zoologisches Forschungsmuseum Alexander Koenig, Bonn (Germany);
ZIN Zoological Institute, Russian Academy of Sciences, St. Petersburg (Russia).

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Archeohomaloplia Nikolajev, 1982

Archeohomaloplia Nikolajev, 1982: 286 (type species *Archeohomaloplia potanini* Nikolajev, 1982 by original designation).

Melanomaladera Miyake & Yamaya, 2001: 38 (type species *Melanomaladera yunnana* Miyake &Yamaya, 2001 by original designation), syn by Ahrens 2007: 6.

Remarks. The genus *Archeohomaloplia* was erected by Nikolajev (1982) mainly based on its differences to the genus *Omaloplia* Schoenherr, 1817, such as the antenna composed by ten antennomeres (instead of nine). Although both genera being not the only ones with a margined pronotal base among the Sericini, their similarity in external appearance is quite notable compared to all other Palearctic Sericini. However, genital morphology of males reveals striking differences between both making it unlikely that both would be sister taxa: While in *Omaloplia* parameres are composed by almost (2–3) independent hairy lobes (Roessner & Ahrens 2004) in *Archeohomaloplia* parameres never bear setae. Furthermore, the hind wing in *Archeohomaloplia* has, in contrast to *Omaloplia*, an anal vein which is sharply bent at middle, which was previously recognised as an unambiguous synapomorphy of 'Modern Sericini' (Ahrens 2006b). Most important shared characters between the two genera all have been identified by Ahrens (2006b) as plesiomorphic character states within basal Sericini (e.g. hypomeron simple, pronotal basis with marginal line) – thus the systematic position and the taxonomic status of *Archeohomaloplia* is still to explore in more detail.

So far, the black and shiny body, the margined base of the pronotum, and a dorsal or lateral apophysis of the phallobase can bee seen as the preliminary diagnostic characteristics of the genus *Archeohomaloplia*.

Distribution. So far *Archeohomaloplia* is known only from the areas east of the Tibetan plateau, with two species occurring also in the mountains of Indochina (Myanmar, Thailand).

Key to species (♂♂)

1 Hypomeron not carinate. Metatarsomere 1 shorter than the following tarsomere. Elytra and legs black.....2
1' Hypomeron finely carinate. Metatarsomere 1 longer than the following tarsomere. Elytra dark brown, legs brownish. 12
2 Disc of pronotum with numerous long, erect setae. 3
2' Disc of pronotum without long setae. 6
3 Setae on pronotum and elytra long, twice as long as ocular diameter. .....*A. frolovi* sp. n.
3' Setae on pronotum and elytra moderately long, as long as ocular diameter. 4
4 Dorsal apophysis of aedeagus moderately long and straight (dorsal view). Setae on elytra shorter than intervals wide. Posterior angles of pronotum blunt. 5
4' Dorsal apophysis of aedeagus strongly bent backwards at middle forming a sharp hook. Setae on elytra almost as long as intervals wide. Posterior angles of pronotum obsolete. ...*A. hebashana* sp. n.
5 Right paramere strongly bent twice, behind basal third and shortly before apex. .....*A. yunnana* (Miyake & Yamaya, 2001)
5' Right paramere strongly bent once only, behind basal third. .....*A. ganhaiziensis* sp. n.
6 Basal marginal line almost complete medially. ...7
6' Basal marginal line widely interrupted medially. 11
7 Sides of clypeus strongly convex, basally slightly convergent, showing a distinct angle with the ocular canthus. Body size larger 7 mm. Aedeagus with large lateral apophysis. .....*A. abbreviata* (Fairmaire, 1897)
7' Clypeus widest at base, angle between sides of clypeus and ocular canthus blunt and indistinct. Body size smaller 6 mm. 8
8 Tegument of pronotum smooth and very shiny. ...9
8' Tegument of pronotum micro-reticulate (80x) and slightly dull. .....*A. kalabi* sp. n.
9 Dorsal apophysis of phallobasis short, much shorter than the apex of phallobasis wide. .....*A. nikolajevi* sp. n.
9' Dorsal apophysis of phallobasis long, almost as wide as the apex of phallobasis. 10
10 Posterior angles of pronotum and anterior angles of labroclypeus blunt. ..*A. medvedevi* Nikolajev, 1982
10' Posterior angles of pronotum obsolete. Anterior angles of labroclypeus convex. .....*A. yaregongensis* sp. n.
11 Setae on elytra distinctly shorter than elytral intervals wide. Dorsal apophysis of phallobasis wide at base. .....*A. mingi* sp. n.
11' Setae on elytra as long as elytral intervals wide. Dorsal apophysis of phallobasis all over narrow and tube-shaped. .....*A. safraneki* sp. n.
12 Antennal club slightly reflexed, almost twice as long as the remaining antennomeres combined. Tibiae and tarsi yellowish brown. ...*A. taunggyiensis* sp. n.
12' Antennal club straight, almost 1.5 times as long as the remaining antennomeres combined. Tibiae and tarsi brown. .....*A. acuta* sp. n.

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***Archeohomaloplia abbreviata* (Fairmaire, 1897)**

Homaloplia abbreviata Fairmaire, 1897: 244 (type locality: China, Sichuan: 'Tchoug-king').
Omaloplia abbreviata [species incertae sedis] – Ahrens 2006a: 242.
Archeohomaloplia abbreviata: Ahrens 2007: 6.
Archeohomaloplia potanini Nikolajev, 1982: 186 (type locality: China, Sichuan: Wa-cy-koj & Za-li), Ahrens 2006a: 230; syn by Ahrens 2007: 6.

Type material examined. Syntype (*Homaloplia abbreviata*): 1 ♂ "Tchoug-king Sze-Tchouan / Museum Paris P. Guerry 1924 / *Homaloplia abbreviata* Fairm. n. sp. / Type" (MNHN), 1 ♀ "Museum Paris 1906 Coll. Leon Fairmaire / Tchoug-king Sze-Tchouan / *Homaloplia abbreviata* Fairm. n. sp. China" (MNHN), 1 ♂ "Tchoug-king Sze-Tchouan / Museum Paris P. Guerry 1924" (MNHN). Neotype (*A. potanini*, here designated): ♂ "mshd [between] Wa-cy-koj i [and] Za-li 15-VII-93 Potanin/ Paratypus *Arch. potanini* Nikolajev 1982" (ZIN). Paratypes (*A. potanini*): 4 ♂, 14 ♀♀ "mshd [between] Wa-cy-koj i [and] Za-li 15-VII-93 Potanin/ Paratypus *Arch. potanini* Nikolajev 1982" (ZIN). Former holotype (*A. potanini)*: ♂ "mshd [between] Wa-cy-koj i [and] Za-li 15-VII-93 Potanin/ Holotypus *Arch. potanini* Nikolaev 1982" (ZIN, holotype destroyed: apical half and abdomen missing, genital lost from cartoon).

Additional material examined. see Ahrens (2007). 1 ex. "China- Sichuan pr. Kangding distr. 21.–24.7.1992 Hailougou Glacier Park R. Dunda lgt." (CP), 8 ex. "W Sichuan 1.–7.VII.1994 29.37N 102.07E 1200–1900 m Moxi – Hailougou lgt. D. Král & J. Farkač" (CK, NHMB), 23 ex. "Siao-Lou Lou Chan Chasseurs Thibétains 1896/ Muséum Paris R. Oberthür 1952" (MNHN), 12 ex. "Su-Tchuen Siao Lou 1897" (MNHN), 6 ex. "Su-Tchuen Mo Sy-Mien 1897" (MNHN), 2 ex. "TaTong Kiao Chasseurs infigènes 1894" (MNHN), 17 ex. "Ta-tsien-Lou Chasseurs de P. Dejean 1904" (MNHN), 32 ex. "Ta-tsien-Lou Chasseurs Thibetains 1896" (MNHN), 2 ex. "Ta-tsien-Lou Chasseurs indigenes 1893" (MNHN), 1 ♀ "Tsékou 1902 R.P.J. Dubernard" (MNHN), 1 ♀ "Vallée du Tong-Ho Chasseurs indigenes 15 Avril–15 Mai 1893" (MNHN), 1 ex. "Mou-Pin R.P. Dejean 1898/ Museum Paris 1952 Coll. R. Oberthür" (MNHN), 35 ex. "Chasseurs indigenes de Ta-Tsien-Lou R.P. Dejean 1901" (MNHN), 16 ex. "Chasseurs Thibetains de Ta-Tsien-Lou Eté 1892 recu du R.P. Dejean " (MNHN), 40 ex. "Museum Paris Se-Tchouen Env. de Ta-Tsien-Lou Mo-Sy-Mien Père Aubert 1902" (MNHN), 4 ex. "China-Sichuan Jintang, Tcho-nin 10.6.–15.6.2004 leg. E. Kučera" (CA), 5 ex. "China, SW Sichuan Moximian, 1300 m Krajcik M. lgt. 1.6.97" (CA), 2 ex. "China Sichuan Gongga Shan, Moxi, 1300 m, 10.–11.VII.96 29°13N 102°10'E/ collected by J. Farkač, P. Kabátek and A. Smetana" (NHMB), 1 ex. "near Fu Liu 3000–8000ft. Aug 10–21 '28/ Szechuen China DC Graham" (USNM), 2 ex. "35mi W of Tatsienlu 5000ft. alt/ Szechuen D.C. Graham June 20 1923" (USNM), 4 ex. "Jul. 9–11.'30 3000–9000ft W of Yachow/ Szechuen China DC Graham" (USNM), 2 ex. "Szechuen China DC Graham/ near Yachow 45–6000 ft Jul. 9–11,'30" (USNM), 1 ex. "bet Yachow & Tatsienlu/ Szechuen China DC Graham 3–8000ft. Jul. 10–13,'30" (USNM), 1 ex. "Tatsienlu 5–6000ft. VII, 10–15.'30/ China-Tibet Border DC Graham" (USNM), 1 ex. "bet. Nigyuenfu & Den Shiang Uiu/ 6000–8000ft. Aug. 6–8'28/ Szechuen China DC Graham" (USNM), 1 ex. "Szechuen China DC Graham" (USNM), 6 ex. "Tsao Keo Miau (Near FuLin)/ 3000–8000ft. Aug. 18–21'28/ Szechuen China DC Graham" (USNM).

Neotype redescription. Length: 7.3 mm, length of elytra: 5.1 mm, width: 4.6 mm. Body oblong, black, antenna black, dorsal surface shiny, on elytra very sparsely setose.

Labroclypeus subrectangular, widest shortly before middle and slightly convergent towards the base, lateral margins strongly convex; anterior angles strongly rounded; lateral border and ocular canthus producing a distinct angle; lateral margins moderately reflexed, anterior margin strongly reflexed and distinctly sinuate medially; surface weakly convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few coarser punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus moderately long and wide, subparallel, abruptly rounded at apex, finely and densely punctate, without terminal seta. Frons shiny, with fine, dense punctures, in the middle and posterior part of frons punctures less dense; glabrous, only behind the frontoclypeal suture with a few longer setae in more robust punctures. Eyes small, ratio of diameter/ interocular width: 0.38. Antenna black, with ten antennomeres; club with three antennomeres, slightly shorter than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at base, lateral margins straight and subparallel in basal half, convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt but rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine complete marginal line; surface with moderately dense and fine punctures, glabrous; anterior and lateral borders setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, almost as wide as long, with fine and very dense punctures, glabrous.

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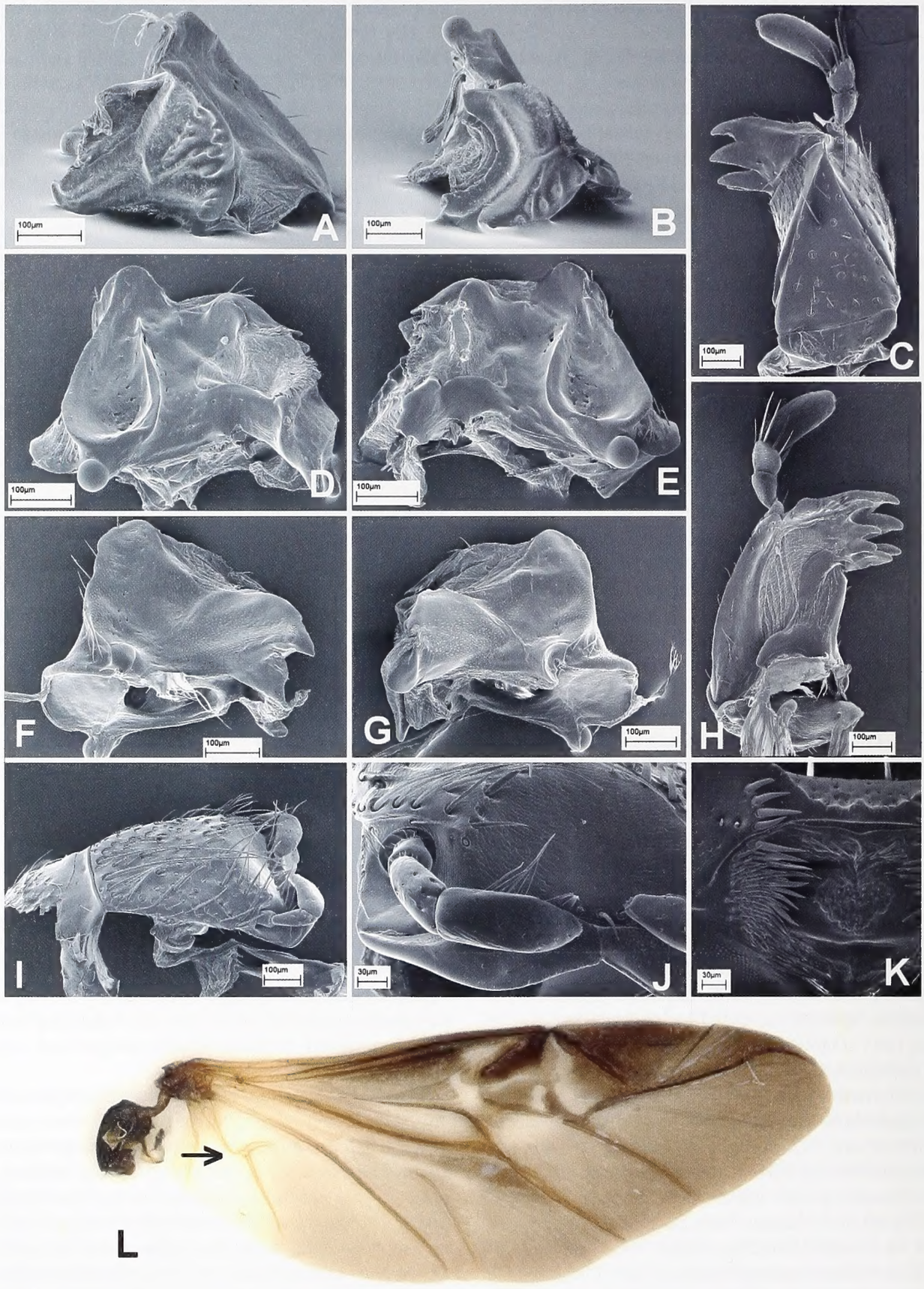

Fig. 1. *Archeohomaloplia abbreviata*: **A, E, F**: left mandible; **B, D, G**: right mandible; **C, H**: left maxilla; **I**: labium (ventrolateral view); **J**: labium (ventroapical view); **K**: labrum and epipharynx; **A, B**: medial view; **C, D, E, K**; ventral view; **F, G, H**: dorsal view; **L**: ala (bent anal vein indicated by the arrow; not to scale).

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Elytra moderately long, widest in apical third, striae distinctly impressed and finely and densely punctate, intervals weakly convex, with fine, sparsely scattered punctures often concentrated along the striae, a few punctures with a fine, white seta; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely setose; metacoxa glabrous with a few strong adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially half as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.25. Pygidium moderately evenly convex, finely and irregularly densely punctate, without smooth midline, surface shiny, with a few long setae at apex.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 2.7; dorsally longitudinally convex, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with sparse, fine punctures, glabrous; ventrally with an indistinctly defined sharp margin and not serrate, with five more robust setae and a few fine ones basally; internal face finely sparsely punctate and smooth, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and also slightly shorter than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 2A–C. Mouth parts: Fig. 1A–K. Hind wing: Fig. 1L. Habitus: 2D.

Remarks. The designation of a neotype was necessary since the holotype was completely destroyed on transport from St. Petersburg.

Archeohomaloplia medvedevi Nikolajev, 1982

Archeohomaloplia potanini Nikolajev, 1982: 188; Ahrens 2006a: 230 (type locality: China: 'Dol. Ciao-tschin-ho').

Type material examined. Neotype (*A. medvedevi*, here designated): ♂ "Dol. Ciao-tschin-ho 27-VII-93 Potanin/ Paratypus *Arch. medvedevi* Nikolajev 1982" (ZIN). Paratypes: 8 ♂♂, 3 ♀♀ "Dol. Ciao-tschin-ho 27-VII-93 Potanin/ Paratypus *Arch. medvedevi* Nikolajev 1982" (ZIN). Former holotype (*A. medvedevi*): ♂ "Dol. Ciao-tschin-ho 27-VII-93 Potanin/ Holotypus Arch. medvedevi Nikolajev 1982" (ZIN, holotype completely destroyed, body entirely missing, male genitalia glued on label with right paramere lacking).

Neotype redescription. Length: 5.3 mm, length of elytra: 3.5 mm, width: 2.9 mm. Body oblong, black, antenna black, dorsal surface shiny, on elytra sparsely setose. Labroclypeus trapezoidal, widest at base and strongly convergent apically, lateral margins weakly convex; anterior angles blunt, weakly rounded; lateral border and ocular canthus producing an indistinct angle; margins moderately reflexed, anterior margin distinctly sinuate medially; surface weakly convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few coarser punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, without terminal seta. Frons shiny, with fine, dense punctures being posteriorly less dense; glabrous. Eyes small, ratio of diameter/ interocular width: 0.35. Antenna brown, with ten antennomeres; club black, with three antennomeres, as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at basal third, lateral margins weakly curved and convergent towards base, straight and strongly convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and weakly rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line; surface with moderately dense and fine punctures, glabrous, rarely a single longer seta on disc; anterior and lateral borders setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, slightly wider than long, with fine and very dense punctures, glabrous.

Elytra oblong and strongly convex, widest in apical third, striae moderately impressed and finely and densely punctate, intervals almost flat, with fine, moderately dense punctures often concentrated along the striae, odd intervals with a longitudinal row of widely spaced, long,

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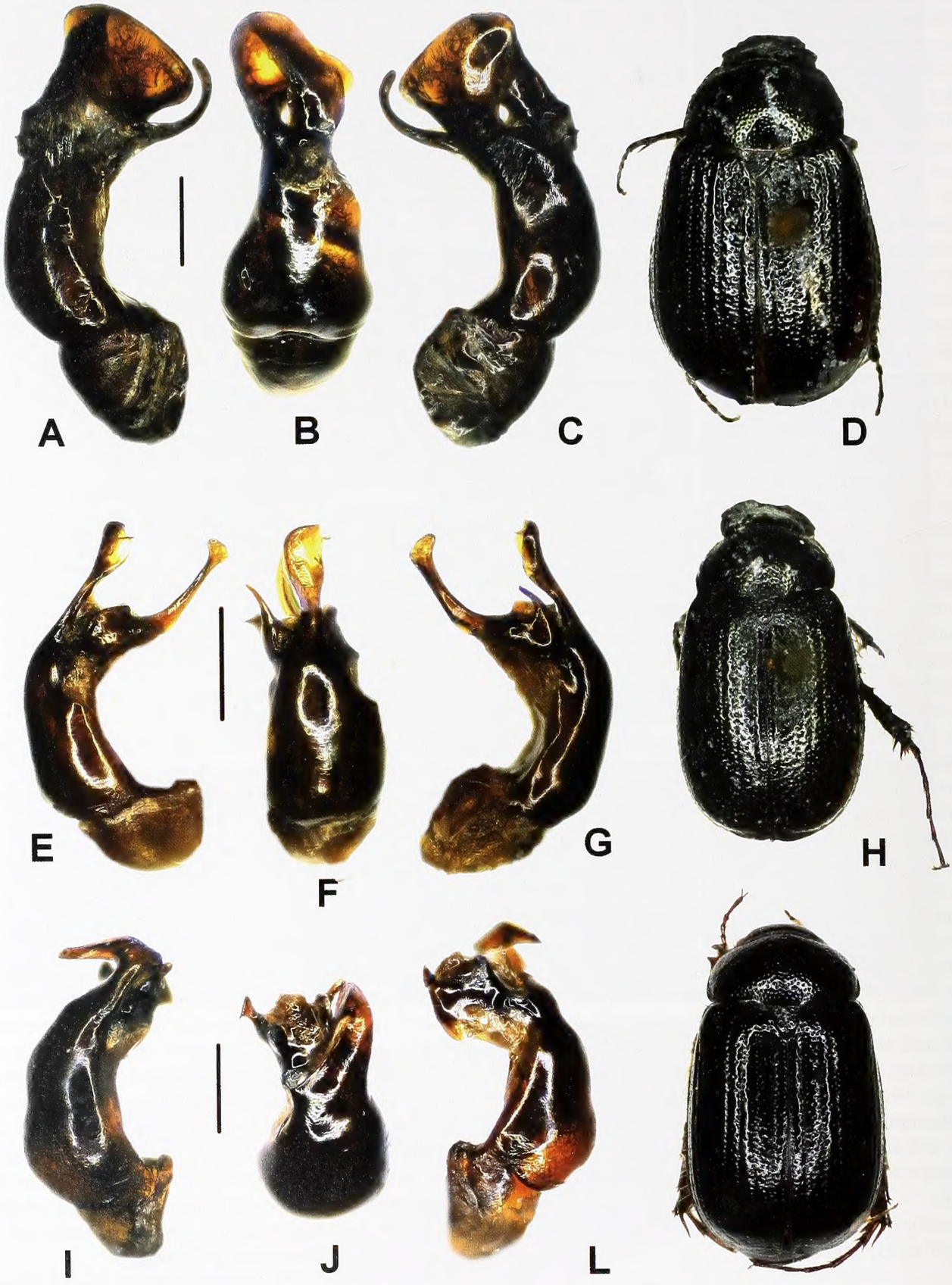

Fig. 2A–D. *A. abbreviata* (Fairmaire, 1897) (neotype *Archeohomaloplia potanini* Nikolajev, 1982); **E–H**: *A. medvedevi* Nikolajev, 1982 (neotype); **I–K**: *A. hebashana* sp. n. (holotype); **A, E, I**: Aedeagus, left side lateral view; **C, G, K**: Aedeagus, right side lateral view; **B, F, J**: parameres, dorsal view; **D, H, K**: Habitus. Scale: 0.5 mm.

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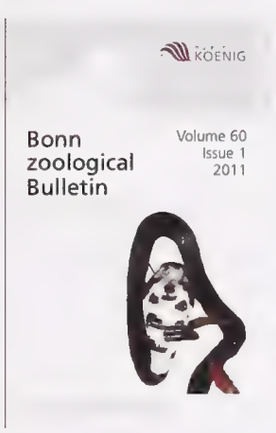

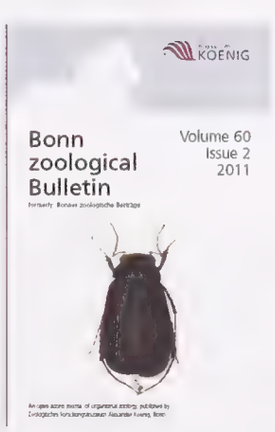

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fine, erect, setae; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes. Ventral surface shiny, with fine and moderately dense punctures, finely setose; metacoxa glabrous with a few strong adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially half as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.5. Pygidium moderately evenly convex, finely and irregularly densely punctate, without smooth midline, surface shiny, sparsely covered with a few long setae. Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 2.9; dorsally longitudinally convex, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with coarse, partly dense punctures, glabrous; ventrally with a sharp, serrate margin bearing four robust, equidistant setae; internal face finely sparsely punctate and smooth, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 2E–G. Habitus: 2H.

Remarks. The designation of a neotype was necessary since the holotype was completely destroyed on transport from St. Petersburg.

Archeohomaloplia hebashana sp. n.

Type material examined. Holotype: ♂ "China: N.W. Yunnan, San Ba, Heba mts. 2500 m, 30.VI.1998 leg. S. Murzin/ Coll. Dirk Ahrens/ 587 Sericini: Asia spec." (ZFMK). Paratypes: 1 ♂, 1 ♀ same data as holotype (CA).

Description. Length: 5.1 mm, length of elytra: 3.6 mm, width: 3.0 mm. Body oblong, black, antenna black, dorsal surface shiny, almost glabrous.

Labroclypeus moderately trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles almost blunt, only little rounded; lateral border and ocular canthus producing a blunt angle; margins moderately reflexed, anterior margin moderately sinuate medially; surface medially convex and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with one terminal seta. Frons shiny, with fine, dense punctures; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.41. Antenna brown, with ten antennomeres; club dark brown, with three antennomeres, as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at middle, lateral margins strongly curved and slightly convergent basally, but stronger convergent anteriorly; anterior angles strongly produced and sharp, posterior angles strongly rounded and almost obsolete; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line at sides; surface with partly dense and fine punctures, glabrous; anterior and lateral borders sparsely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, odd intervals with fine, quite long setae (setae slightly longer that the interval wide); interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of me-

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tepisternum/ metacoxa: 1/ 1.25. Pygidium strongly evenly convex, finely and evenly not very densely punctate, without smooth midline; surface shiny, sparsely covered with short setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 3.2; dorsally longitudinally convex, apically also sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine punctures laterally, almost glabrous; ventrally with a sharp, finely serrate margin, with four robust setae; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and slightly longer than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 2I–K. Habitus: 2L.

Diagnosis. *A. hebashana* sp. n. is in external shape very similar to *A. yunnana*; it may be distinguished from it by dorsal apophysis of phallobasis being strongly bent backwards at middle forming a sharp hook. It differs from *A. abbreviata* by its smaller size and the sparse setae on pronotum as well as by the phallobasal apophysis being dorsal instead of lateral.

Variation. Length: 5.1–5.3 mm, length of elytra: 3.6–3.7 mm, width: 3.0 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is slightly shorter than the remaining antennomeres combined. Setae on disc of elytra may be more or less abundant depending on the state of preservation.

Etymology. The species is named according to its provenience from Heba Shan Mountains.

Archeohomaloplia frolovi sp. n.

Type material examined. Holotype: ♂ "Dol. r. Tunk-go-ho 22-VII-93 Potanin/ Paratypus *Arch. medvedevi* Nikolajev 1982" (ZIN). Paratypes: 1 ♂, 7 ♀♀ "Dol. r. Tunk-go-ho 22-VII-93 Potanin/ Paratypus *Arch. medvedevi* Nikolajev 1982" (CA, ZIN).

Description. Length: 5.4 mm, length of elytra: 3.5 mm, width: 3.1 mm. Body oblong, black, antenna black, dorsal surface shiny, on elytra densely setose.

Labroclypeus trapezoidal, widest at base and strongly convergent apically, lateral margins weakly convex; anterior angles strongly convex; lateral border and ocular canthus producing an indistinct blunt angle; margins moderately reflexed, anterior margin distinctly sinuate medially; surface weakly convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, without terminal seta. Frons shiny, with fine, dense punctures being posteriorly less dense; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.33. Antenna black, with ten antennomeres; club with three antennomeres, slightly longer than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at basal third, lateral margins weakly curved and subparallel in basal half, straight and moderately convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and weakly rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line; surface with moderately dense and fine punctures, with numerous long, erect setae on disc; anterior and lateral borders densely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, as wide as long, with fine and dense punctures, glabrous.

Elytra oblong, widest in apical third, striae moderately impressed and finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, intervals with fine, erect setae being as long as three combined intervals wide; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the ster-

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nite, last sternite medially almost as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.6. Pygidium moderately convex, finely and irregularly densely punctate, in some parts punctures confluent, without smooth midline, surface shiny, sparsely covered with a setae along the margins.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long; subparallel most of its length, basally narrowed, widened ventrally at apex, ratio width/ length: 1/ 2.7; dorsally longitudinally convex, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine, laterally partly dense punctures, glabrous; ventrally with a sharp, finely serrate margin, with four robust setae in apical half; internal face finely sparsely punctate and with a few long setae laterally, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 3A–C. Habitus: 3D.

Diagnosis. *A. frolovi* sp. n. is in external shape very similar to *A. medvedevi* sp. n.; it may be distinguished from that and all other species by the very long and dense setae on the elytra as well as by the shape of parameres.

Variation. Length: 5.1–5.4 mm, length of elytra: 3.5–3.9 mm, width: 2.9–3.2 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is slightly shorter than the remaining antennomeres combined. Sometimes the pilosity may be erased.

Etymology. The species is named in honour of Andrey Frolov, St. Petersburg, to thank him for his support with this work.

Archeohomaloplia nikolajevi sp. n.

Type material examined. Holotype: ♂ "Dol. Ciao-tschinho 27-VII-93 Potanin/ Paratypus *Arch. medvedevi* Nikolajev 1982" (ZIN).

Description. Length: 5.2 mm, length of elytra: 3.2 mm, width: 2.9 mm. Body oblong, black, antenna black, dorsal surface shiny, on elytra sparsely setose.

Labroclypeus trapezoidal, widest at base and strongly convergent apically, lateral margins weakly convex; anterior angles strongly convex; lateral border and ocular canthus producing an indistinct blunt angle; margins moderately reflexed, anterior margin distinctly sinuate medially; surface weakly convex medially and shiny, coarsely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, without terminal seta. Frons shiny, with coarse, dense punctures being posteriorly less dense; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.32. Antenna black, with ten antennomeres; club with three antennomeres, as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at basal third, lateral margins weakly curved and subparallel in basal half, straight and moderately convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and weakly rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line; surface with moderately dense and fine punctures, glabrous, with a few single longer setae on disc; anterior and lateral borders densely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, as wide as long, with fine and dense punctures, narrowly smooth along the middle, glabrous.

Elytra oblong and strongly convex, widest in apical third, striae moderately impressed and finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, odd intervals with a longitudinal row of widely spaced, long, fine, erect, setae; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely setose; metacoxa glabrous with a few strong adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially half as long as penultimate one. Mes-

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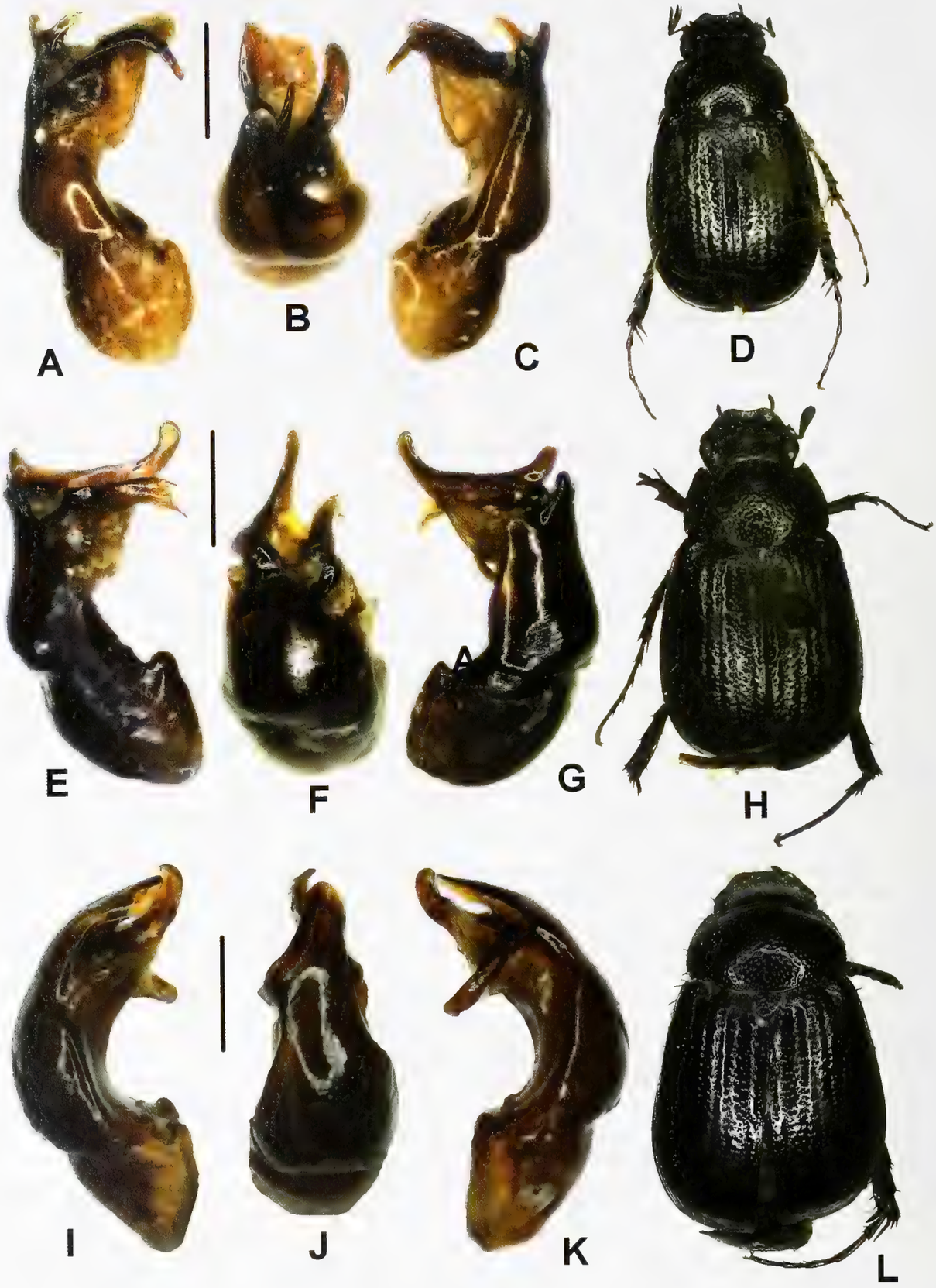

Fig. 3A–D. *A. frolovi* sp. n. (holotype); **E–H**: *A. nikolajevi* (holotype); **I–K**: *A. yaregongensis* sp. n. (holotype); **A, E, I**: Aedeagus, left side lateral view; **C, G, K**: Aedeagus, right side lateral view; **B, F, J**: parameres, dorsal view; **D, H, K**: Habitus. Scale: 0.5 mm.

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osternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.4. Pygidium moderately convex, finely and moderately densely punctate, without smooth midline, surface shiny, sparsely covered with a few short setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long; subparallel most of its length, basally narrowed, widened ventrally at apex, ratio width/ length: 1/ 2.67; dorsally longitudinally convex, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine, laterally partly dense punctures, glabrous; ventrally with a sharp, finely serrate margin, with four robust setae; internal face finely sparsely punctate and with a few long setae, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 3E–G. Habitus: 3H.

Diagnosis. *A. nikolajevi* sp. n. is in external shape very similar to *A. medvedevi* sp. n.; it differs, however, by the phallobasal apophysis being much shorter than the apex of phallobasis wide.

Etymology. The species is named in honour of Georgi Nikolajev, Alma-Ata, who revised the genus for first time.

Archeohomaloplia yaregongensis sp. n.

Type material examined. Holotype: ♂ "Thibet Yarégong P. Soulié 1900" (MNHN). Paratypes: 2 ♂, 1 ♀ same data as holotype (MNHN, CA).

Description. Length: 5.3 mm, length of elytra: 3.5 mm, width: 3.4 mm. Body oblong, black, dorsal surface shiny, almost glabrous.

Labroclypeus weakly trapezoidal, widest at base and convergent apically, lateral margins almost straight; anterior angles strongly convex; lateral border and ocular canthus producing a distinct angle; margins moderately reflexed, anterior margin deeply sinuate medially; surface convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with one terminal seta. Frons shiny, with fine, moderately dense punctures; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.33. Antenna black, with ten antennomeres; club with three antennomeres, as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest shortly before base, lateral margins strongly convex and convergent anteriorly; anterior angles strongly produced and sharp, posterior angles strongly rounded and obsolete; anterior margin convexly produced medially, with a broad marginal line, basal margin with complete fine marginal line; surface with dense and fine punctures, with a few long setae on disc; anterior and lateral borders densely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, odd intervals with fine, short setae; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one, with longer and denser setae. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.48. Pygidium strongly convex apically, finely and evenly, not densely punctate, without smooth midline; surface shiny, sparsely covered with short setae on apex.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia mode-

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rately slender and not long; evenly widened towards apex, ratio width/ length: 1/ 3.1; dorsally weakly longitudinally convex, apically sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, laterally with sparse, fine punctures, almost glabrous; ventrally with a sharp, finely serrate margin, with four robust setae; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 3I–K. Habitus: 3L.

Diagnosis. *A. yaregongensis* sp. n. is in external shape very similar to *A. hebashana* sp. n.; it may be differentiated from it by the glabrous disc of pronotum and the shape of aedeagus; the dorsal apophysis of phallobasis is long and moderately narrowed towards the rounded apex. From the also similar *A. medvedevi* sp. n. it can be distinguished by the obsolete posterior angles of pronotum and the convex anterior angles of labroclypeus.

Variation. Length: 5.0–5.6 mm, length of elytra: 3.3–3.7 mm, width: 3.4 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is distinctly slightly shorter than the remaining antennomeres combined; the punctures on pygidium are less dense and the surface of pygidium shows a fine micro-reticulation.

Etymology. The species is named according to its provenience from 'Yarégong' (at the Tibetan-Sichuan border, geographical coordinates not localised).

Archeohomaloplia kalabi sp. n.

Type material examined. Holotype: ♂ "China: NW Sichuan, Garze env., 2500m, J. Kaláb leg., 10.7.1995/ Coll. Dirk Ahrens/ 587 Sericini: Asia spec." (ZFMK). Paratypes: 1 ♂, 3 ♀♀ – same data as holotype (CA), 1 ♂ "ChNW: Sichuan 1/7.1995 31.37N 100.00E Garze 3300m W outskirts Jaroslav Turna leg./ Coll. P. Pacholátko" (CP).

Description. Length: 5.5 mm, length of elytra: 3.7 mm, width: 3.2 mm. Body oblong, black, antenna black, dorsal surface with distinct micro-reticulation, moderately shiny, almost glabrous.

Labroclypeus moderately trapezoidal, widest at base and strongly convergent apically, lateral margins weakly convex; anterior angles moderately rounded; lateral border and ocular canthus producing an indistinct blunt angle; margins weakly reflexed, anterior margin distinctly sinuate medially; surface convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with the trace of a terminal seta. Frons shiny, with fine, dense punctures; with a numerous short and erect setae behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.35. Antenna black, with ten antennomeres; club with three antennomeres, distinctly shorter than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at middle, lateral margins weakly curved and slightly convergent basally, but stronger convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and weakly rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line; surface with dense and fine punctures, glabrous; anterior and lateral borders sparsely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, as wide as long, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals moderately convex, with coarse, moderately dense punctures often concentrated along the striae; central intervals apparently glabrous, lateral odd intervals with a few fine, short setae; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface moderately shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.29. Pygidium moderately evenly convex, finely, densely partly punctate, punctures partly confluent, without smooth midline; surface almost dull, sparsely covered with short setae on apical half.

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Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 2.9; dorsally longitudinally sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine punctures laterally, glabrous; ventrally with a sharp, finely serrate margin, with four robust setae in apical half; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 4A–C. Habitus: 4D.

Diagnosis. *A. kalabi* sp. n. differs from all other known species of the genus by the less shiny body surface.

Variation. Length: 5.4–5.6 mm, length of elytra: 3.5–3.7 mm, width: 2.9–3.0 mm. Female specimens are very similar to males having the pygidium, however, less convex.

Etymology. The species is dedicated to its collector, Jaroslav Kaláb, Jinačovice.

Archeohomaloplia mingi sp. n.

Type material examined. Holotype: ♂ "China Sichuan Xiangcheng 2700 m 29.VI.1996 29°00N 99°46E/ collected by J. Farkac, P. Kabatek and A. Smetana/ NHM Basel/ 765 Sericini: Asia spec." (NHMB). Paratypes: 1 ♂, 3 ♀♀ same data as holotype (CA, NHMB).

Description. Length: 5.9 mm, length of elytra: 3.8 mm, width: 3.3 mm. Body oblong, black, antenna black, dorsal surface shiny, almost glabrous.

Labroclypeus moderately trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles strongly convex; lateral border and ocular canthus producing a blunt angle; margins moderately reflexed, anterior margin distinctly sinuate medially; surface convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with one terminal seta. Frons shiny, with fine, dense punctures; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.37. Antenna black, with ten antennomeres; club with three antennomeres, as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at middle, lateral margins weakly curved and slightly convergent basally, but stronger convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and weakly rounded at the tip; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line that is widely interrupted medially; surface with moderately dense and fine punctures, with one long seta on each side of disc; anterior and lateral borders densely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, as wide as long, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals flat, with fine, moderately dense punctures often concentrated along the striae, odd intervals with fine, short setae; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.37. Pygidium strongly evenly convex, finely and sparsely punctate, without smooth midline; surface shiny, sparsely covered with short setae along the apical margin.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slen-

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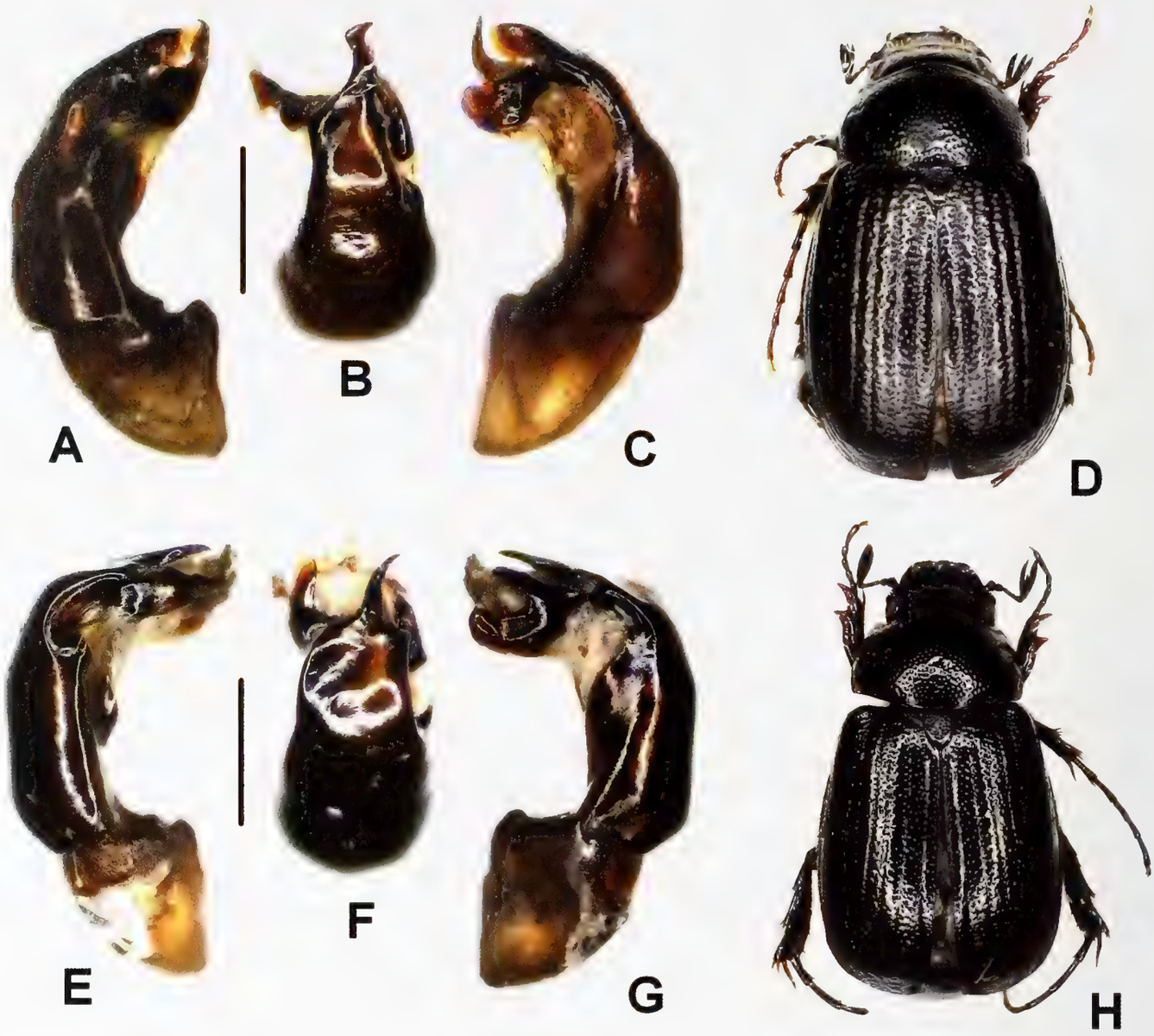

Fig. 4A–D. *A. kalabi* sp. n. (holotype); **E–H**: *A. mingi* (holotype); **A, E**: Aedeagus, left side lateral view; **C, G**: Aedeagus, right side lateral view; **B, F**: parameres, dorsal view; **D, H**: Habitus. Scale: 0.5 mm.

der and moderately long; subparallel most of its length, basally narrowed, widened ventrally at apex, ratio width/ length: 1/ 2.7; dorsally longitudinally sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine punctures laterally, glabrous; ventrally with a sharp, finely serrate margin, with four robust setae in apical half; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and slightly shorter than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 4E–G. Habitus: 4H.

Diagnosis. *A. mingi* sp. n. can be distinguished by all other *Archeohomaloplia* species by the basal marginal line of pronotum being medially interrupted.

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Variation. Length: 5.4–6.3 mm, length of elytra: 3.6–3.9 mm, width: 3.0–3.3 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is slightly shorter than the remaining antennomeres combined. Setae on disc of pronotum may lack.

Etymology. The species is dedicated to my dear colleague, the Chinese scarab specialist Ming Bai, Beijing.

Archeohomaloplia ganhaiziensis sp. n.

Type material examined. Holotype: ♂ "Yunnan 3000m 27.05N 100.15E Yulongshan mts. Ganhaizi pass 4.7.92 David Kral leg./ Coll. David Kral, Praha/ 555 Sericini: Asia spec." (NMPC). Paratypes: 2 ♂♂, 3 ♀♀ same data as holotype (NMPC), 1 ♀ "Yunnan 3000 m 27.05N 100.15E Yulongshan mts. Ganhaizi pass 7.–12.VII.90 David Kral leg." (NMPC), 2 ♂♂, 1 ♀ "China, N-Yunnan 27°06'N 100°15'E Yulongshan mts. 3000–3500 m Ganhaizi pass lgt. D. Král 7–12/7'90" (CA), 3 ♂♂, 4 ♀♀ "China, N-Yunnan 27°06'N 100°15'E Yulongshan mts. 3000–3500 m Ganhaizi pass lgt. D. Král 18–23/7'90" (CA), 3 ♀♀ "China, Yunnan prov. 27°06 N 100°15 E Yulongshan mts. 3000–3500 m Ganhaizi pass lgt. Vit Kubán leg. 18.–23.VII.1990" (CA), 2 ♀♀ "China, Yunnan prov. 27°06 N 100°15 E Yulongshan mts. 3000–3500 m Ganhaizi pass lgt. Vit Kubáň leg. 24.–26.VII.1990" (CA), 1 ♂ "Yunnan, 23.–24. Jun 1993 Yulong Mts. 27.00N 100.12E Bolm lgt. 3200m/ Coll. P. Pacholátko" (CP), 1 ♂ "Yunnan 1950–2050m 27.18N 100.14E Daju, Jinsha r. 7–10/7.92 Vit Kubáň leg./ Coll. P. Pacholátko" (CP), 1 ♂ "China Yunnan Lijiang 2100 m 13.–27.VI.1995 leg. Pekarovič"/ Coll. P. Pacholátko" (CP), 1 ♂ "X-DA1623/ China: Yunnan province, 26km N Lijiang, 15.VI.2007 Ganhaizi pass 27°97.1'N 100°14.9'E, 3000m, J. Hájek & J. Růžička [Ch26]/ individually collected under stones, on soil surface and on plants and dense shrubs, sparse coniferous forest (with dominant Pinus)" (CA), 4 ♂♂, 2 ♀♀ " China: Yunnan province, 26km N Lijiang, 15.VI.2007 Ganhaizi pass 27°97.1'N 100°14.9'E, 3000m, J. Hájek & J. Růžička [Ch26]/ individually collected under stones, on soil surface and on plants and dense shrubs, sparse coniferous forest (with dominant Pinus)" (NMPC).

Description. Length: 6.6 mm, length of elytra: 4.3 mm, width: 3.6 mm. Body oblong, black, dorsal surface shiny, almost glabrous.

Labroclypeus trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles strongly convex; lateral border and ocular canthus producing a distinct angle; margins moderately reflexed, anterior margin deeply sinuate medially; surface convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with one terminal seta. Frons shiny, with fine, dense punctures that are posteriorly less dense; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.38. Antenna black, with ten antennomeres; club with three antennomeres, slightly shorter than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at base, lateral margins weakly convex and evenly convergent anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and moderately rounded; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line at sides; surface with dense and fine punctures, with a few long setae on disc; anterior and lateral borders densely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, odd intervals with fine, moderately long setae (setae shorter (on disc) or as long (sides) as intervals wide); interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one, with longer and denser setae. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.29. Pygidium moderately evenly convex, finely and evenly, not densely punctate, without smooth midline; surface shiny, sparsely covered with short setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slen-

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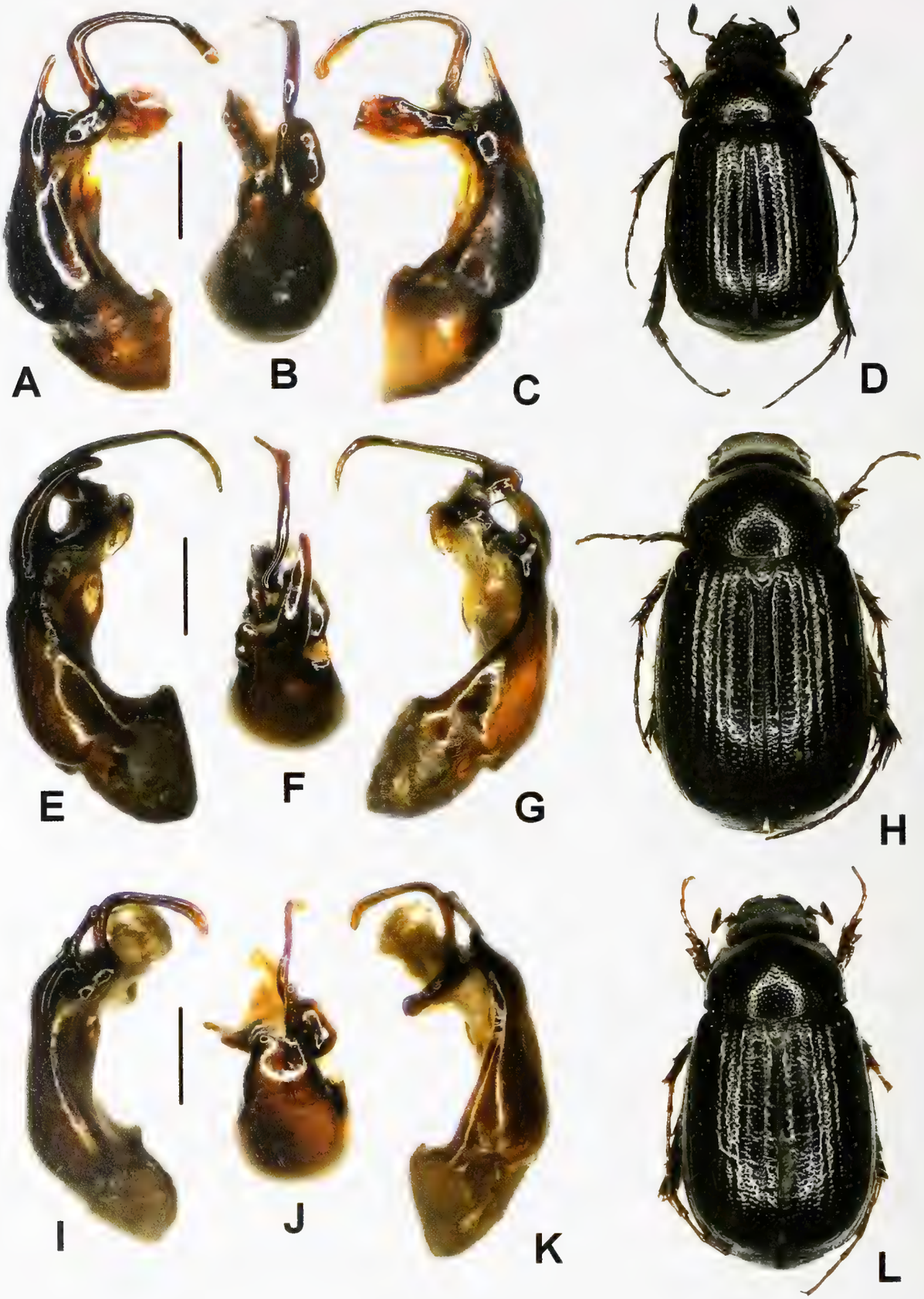

Fig. 5A–D. *A. ganhaiziensis* sp. n. (holotype); **E–H**: *A. yunnana* (Miyake & Yamaya, 2001) (China: Degen env.); **I–K**: *A. safraneki* sp. n. (holotype); **A, E, I**: Aedeagus, left side lateral view; **C, G, K**: Aedeagus, right side lateral view; **B, F, J**: parameres, dorsal view; **D, H, K**: Habitus. Scale: 0.5 mm.

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der and moderately long, evenly widened towards apex, ratio width/ length: 1/ 3.4; dorsally longitudinally convex, apically also sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine punctures laterally, almost glabrous; ventrally with a sharp, finely serrate margin, with four robust setae; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following tarsomere and slightly shorter than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 5A–C. Habitus: 5D.

Diagnosis. *A. ganhaiziensis* sp. n. is in external shape very similar to *A. yunnana*; it may be differentiated from it by the shape of right paramere which is once bent at basal third and the smaller dorsal apophysis of phallobasis.

Variation. Length: 5.8–6.6 mm, length of elytra: 4.0–4.3 mm, width: 3.3–3.6 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is distinctly slightly shorter than the remaining antennomeres combined; the punctures on pygidium are less dense and the surface of pygidium shows a fine micro–reticulation.

Etymology. The species is named according to its provenience from Ganhaizi pass (Yulang Shan).

Archeohomaloplia yunnana (Miyake & Yamaya, 2001)

Melanomaladera yunnana Miyake & Yamaya, 2001: 38 (type locality: China: Degen).
Archeohomaloplia yunnana: Ahrens 2007: 7.

Type material examined. Holotype (*Melanomaladera yunnana*): ♂ "China NW Yunnan Degen city env. 3300 m alt. 29. Jun. 1998 A. Gorodinski / Holotypus *Melanomaladera yunnana* sp. n. Y. Miyake 199" (NMMC).

Additional material examined. 2 ex. "China pr. Yunnan b. occ. Degen 3900 m 7.6.1993 R. Cervenka lgt." (CP), 2 ex. (1 ♂, 1 ♀) "Yunnan/ *Apogonia nigroolivacea* Heyd." (MNHN), 11 ex. "Yunnan" (MNHN). (see also Ahrens 2007).

Aedeagus: Fig. 5E–G. Habitus: 5H.

Archeohomaloplia safraneki sp. n.

Type material examined. Holotype: ♂ "SE Tibet, 3000–3500 m, ca 20 km N of Yangjing 23.VII.–8.VIII.1998 Šafránek & Trýzna lgt/ Coll. P. Pacholátko Invt. No./ 766 Sericini: Asia spec." (CP). Paratypes: 2 ♂♂, 1 ♀ same data as holotype (CP, CA).

Description. Length: 6.0 mm, length of elytra: 3.8 mm, width: 3.2 mm. Body oblong, black, antenna brown, tarsi yellowish brown, dorsal surface shiny, almost glabrous. Labroclypeus trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles strongly convex; lateral border and ocular canthus producing a distinct angle; margins moderately reflexed, anterior margin deeply sinuate medially; surface convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures behind anterior margin bearing each a long, erect seta; frontoclypeal suture feebly incised, medially moderately curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, subtriangular, rounded at apex, finely and densely punctate, with one terminal seta. Frons shiny, with fine, dense punctures that are posteriorly less dense; with a few erect setae on sides behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.41. Antenna yellowish brown, with ten antennomeres; club dark brown, with three antennomeres, slightly shorter than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at base, lateral margins straight and subparallel in basal half, convergent and weakly convex anteriorly; anterior angles strongly produced and sharp, posterior angles blunt and moderately rounded; anterior margin convexly produced medially, with a broad marginal line, basal margin with fine marginal line at sides; surface with dense and fine punctures, glabrous; anterior and lateral borders sparsely setose; hypomeron simple, not carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and very dense punctures, glabrous.

Elytra oblong, widest in apical third, striae weakly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures often concentrated along the striae, odd intervals with fine, moderately long setae (setae as long as intervals wide); interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setose; apical border of elytra without short microtrichomes.

Ventral surface shiny, with fine and moderately dense punctures, finely densely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse

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row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one, with longer and denser setae. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.43. Pygidium moderately evenly convex, finely and evenly, not densely punctate, without smooth midline; surface shiny, sparsely covered with short setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part only weakly widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 3.2; dorsally longitudinally convex, apically also sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, with fine punctures laterally, almost glabrous; ventrally with a sharp, finely serrate margin, with four robust setae; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a robust longitudinal carina, first metatarsomere distinctly shorter than the following and slightly longer than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 5I–K. Habitus: 5L.

Diagnosis. *A. safraneki* sp. n. is in external shape very similar to *A. yunnana*; it may be differentiated from it by the much shorter right paramere and the smaller dorsal apophysis of phallobasis.

Variation. Length: 6.1–6.3 mm, length of elytra: 3.7–4.1 mm, width: 3.0–3.6 mm. Female specimens are very similar to males but have slightly shorter antennal clubs, i.e. the club is distinctly slightly shorter than the remaining antennomeres combined; the punctures on pygidium are less dense and the surface of pygidium shows a fine micro-reticulation.

Etymology. The species is dedicated to one of its collectors, Ondřej Šafránek, Jiřetín pod Jedlovou.

***Archeohomaloplia taunggyiensis* sp. n.**

Type material examined. Holotype: ♂ "Burma (Myanmar) SW Shan state Taunggyi J. Rejsek 1.–18.6.1997/ Coll. Dirk Ahrens/ 412 Sericini: Asia spec." (ZFMK). Paratypes: 5 ♂♂, 4 ♀♀ same data as holotype (ZFMK, CA), 1 ♂ "NW Thailand, 25.iv.–7.v.1996 Chiang Mai prov. Ban San Pakia Sv. Bilý leg., 1700m/ Coll. P. Pacholátko Brno/ TS144" (CP).

Description. Length: 4.8 mm, length of elytra: 2.9 mm, width: 2.5 mm. Body oblong, black, elytra dark brown, legs and antenna yellowish-brown; surface shiny, almost glabrous.

Labroclypeus short trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles strongly rounded; lateral border and ocular canthus producing a distinct angle; margins moderately reflexed, anterior margin very weakly sinuate medially; surface weakly convex and shiny, finely and densely punctate, distance between punctures subequal their diameter, with a few robust punctures beside anterior and lateral margins bearing each a robust, erect seta; frontoclypeal suture distinctly incised, medially weakly curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, finely and densely punctate, without terminal seta. Frons shiny, with coarse, dense punctures on anterior half, on posterior half almost smooth; with a few setae behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.41. Antenna yellow, with ten antennomeres; club with three antennomeres, almost twice as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at base, lateral margins convex and strongly convergent anteriorly; anterior angles strongly produced and sharp, posterior angles strongly rounded; anterior margin weakly convexly produced medially, with a fine marginal line, basal margin with fine marginal line which sometimes is substituted by a row of fine, single punctures; surface with sparse and fine punctures, glabrous; anterior and lateral borders glabrous; hypomeron finely carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and dense punctures, glabrous.

Elytra oblong, widest shortly behind middle, striae distinctly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures, concentrated along the striae, glabrous; interior apical angle of elytra without strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura almost glabrous, only with a few fine setae; apical border with short white microtrichomes.

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Ventral surface shiny, with fine and moderately dense punctures, finely sparsely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites micro-reticulate, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one, with longer and denser setae. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.5. Pygidium moderately evenly convex, finely and not densely punctate, without smooth midline; surface shiny, each puncture with a minute seta, on apex a few longer setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part moderately widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia slender and moderately long, evenly widened towards apex, ratio width/ length: 1/ 2.9; dorsally sharply carinate, with two groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, laterally with fine punctures, glabrous; ventrally with a sharp, finely serrate margin, with four robust setae in apical half; internal face laterally with a few punctures bearing each a fine seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and finely densely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a fine longitudinal carina, first metatarsomere slightly longer than the following tarsomere and one third of its length longer than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 6A–C. Habitus: 6D.

Diagnosis. *A. taunggyiensis* sp. n. differs from all other *Archeohomaloplia* species by the longer first metatarsomere, the carinate hypomeron, and the shape of labroclypeus.

Variation. Length: 4.3–4.8 mm, length of elytra: 2.8–2.9 mm, width: 2.4 mm. Female specimens are very similar to males but have much shorter antennal clubs, the club is only as long as the remaining antennomeres combined. In some paratype some setae at anterior margin of pronotum present.

Remarks. Given the margined ventral hypomeron and the partly reduction of the basal pronotal border, the systematic position of the species is still to explore more in detail: Ahrens (2006b) assumed that the carinate hypomeron is a synapomorphy of 'modern Sericini', but the degree of homoplasy of this trait is little explored yet. Due to their overall general appearance, their very similar genital morphology A. taunggyiensis sp. n. is so far assigned to Archeohomaloplia.

Etymology. The species is named according to its provenience from Taunggyi (Myanmar).

Archeohomaloplia acuta sp. n.

Type material examined. Holotype: ♂ "Burma (Myanmar) SW Shan state Taunggyi J. Rejsek 1.–18.6.1997/ Coll. Dirk Ahrens/ 410Sericini: Asia spec." (ZFMK). Paratypes: 1 ♂, 1 ♀ "Burma: SW Shan State; Kalaw; 10.–11.vi.1997 (70 km WSW Taunggyi) J. Kaláb leg." (CP).
Description. Length: 4.1 mm, length of elytra: 2.5 mm, width: 2.5 mm. Body oblong, black, elytra dark brown, legs and antenna brown; surface shiny, almost glabrous.
Labroclypeus short trapezoidal, widest at base and convergent apically, lateral margins weakly convex; anterior angles strongly rounded; lateral border and ocular canthus producing a distinct angle; margins moderately reflexed, anterior margin very weakly sinuate medially; surface weakly convex and shiny, finely and densely punctate, distance between punctures less than their diameter, with a few robust punctures beside anterior and lateral margins bearing each a robust, erect seta; frontoclypeal suture very finely incised, medially weakly curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and wide, finely and densely punctate, without terminal seta. Frons shiny, with coarse, irregularly dense punctures, punctures behind less dense; with a few setae behind the frontoclypeal suture. Eyes small, ratio of diameter/ interocular width: 0.4. Antenna brown, with ten antennomeres; club with three antennomeres, slightly longer than the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.
Pronotum moderately wide, widest at base, lateral margins convex and strongly convergent anteriorly; anterior angles strongly produced and sharp, posterior angles strongly rounded; anterior margin weakly convexly produced medially, with a fine marginal line; basal margin with a fine complete marginal line; surface with moderately dense and fine punctures, glabrous; anterior and lateral borders glabrous; hypomeron finely carinate at base and not ventrally produced. Scutellum triangular, slightly longer than wide, with fine and dense punctures, glabrous.

Elytra oblong, widest shortly behind middle, striae distinctly impressed, finely and densely punctate, intervals weakly convex, with fine, moderately dense punctures, concentrated along the striae, with a few single setae on

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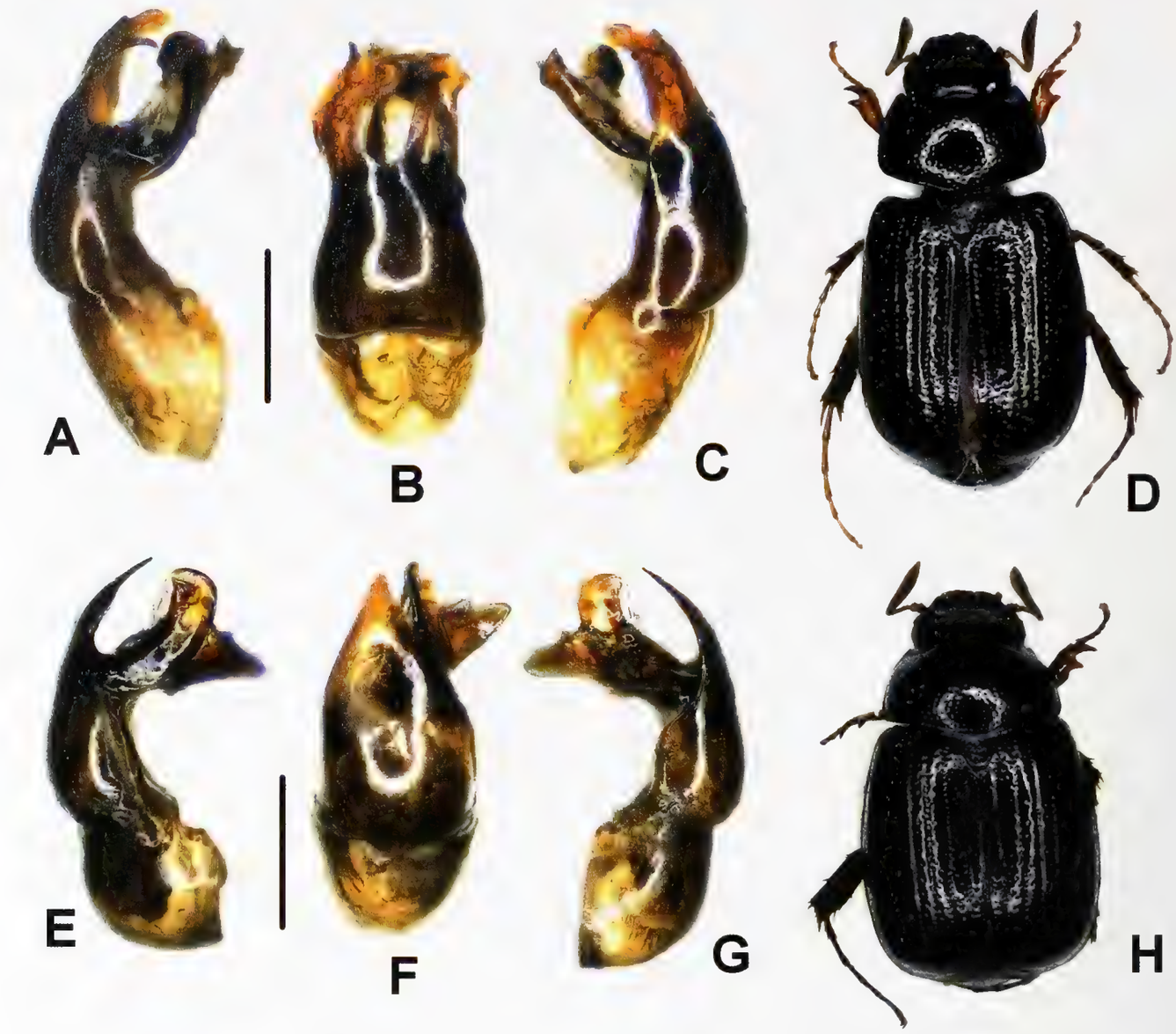

Fig. 6A–D. *A. taunggyiensis* sp. n. (holotype); **E–H**: *A. acuta* (holotype); **A, E**: Aedeagus, left side lateral view; **C, G**: Aedeagus, right side lateral view; **B, F**: parameres, dorsal view; **D, H**: Habitus. Scale: 0.5 mm.

lateral and sutural intervals; interior apical angle of elytra without strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura almost glabrous, only with a few fine setae; apical border with a few single white microtrichomes at apex.

Ventral surface shiny, with fine and moderately dense punctures, finely sparsely setose; metacoxa glabrous with a few fine, long, adjacent setae laterally only; abdominal sternites shiny, with an indistinct, transverse row of coarse punctures bearing a moderately long seta between fine, dense punctation, a few fine punctures bear a short seta; penultimate sternite apically with a smooth, sclerotized border which is one fifth as long as the sternite, last sternite medially 0.75 times as long as penultimate one, with longer and denser setae. Mesosternum between mesocoxae as wide as mesofemur, with fine, long setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.55. Pygidium strongly evenly convex, coarsely and densely punctate, without smooth midline; surface shiny, each puncture with a minute seta, along the apical margin with a few longer setae.

Legs slender and moderately long; femora shiny, with two longitudinal rows of setae, coarsely but sparsely punctate; metafemur sharply carinate anteriorly and without a submarginal serrate line, posterior margin weakly convex and with a few short setae basally, its ventral part moderately widened in apical half and not serrate, internally not serrate, with dense, long setae. Metatibia wide and short; subparallel, abruptly narrowed basally, ratio width/ length: 1/ 2.67; dorsally sharply carinate, with two

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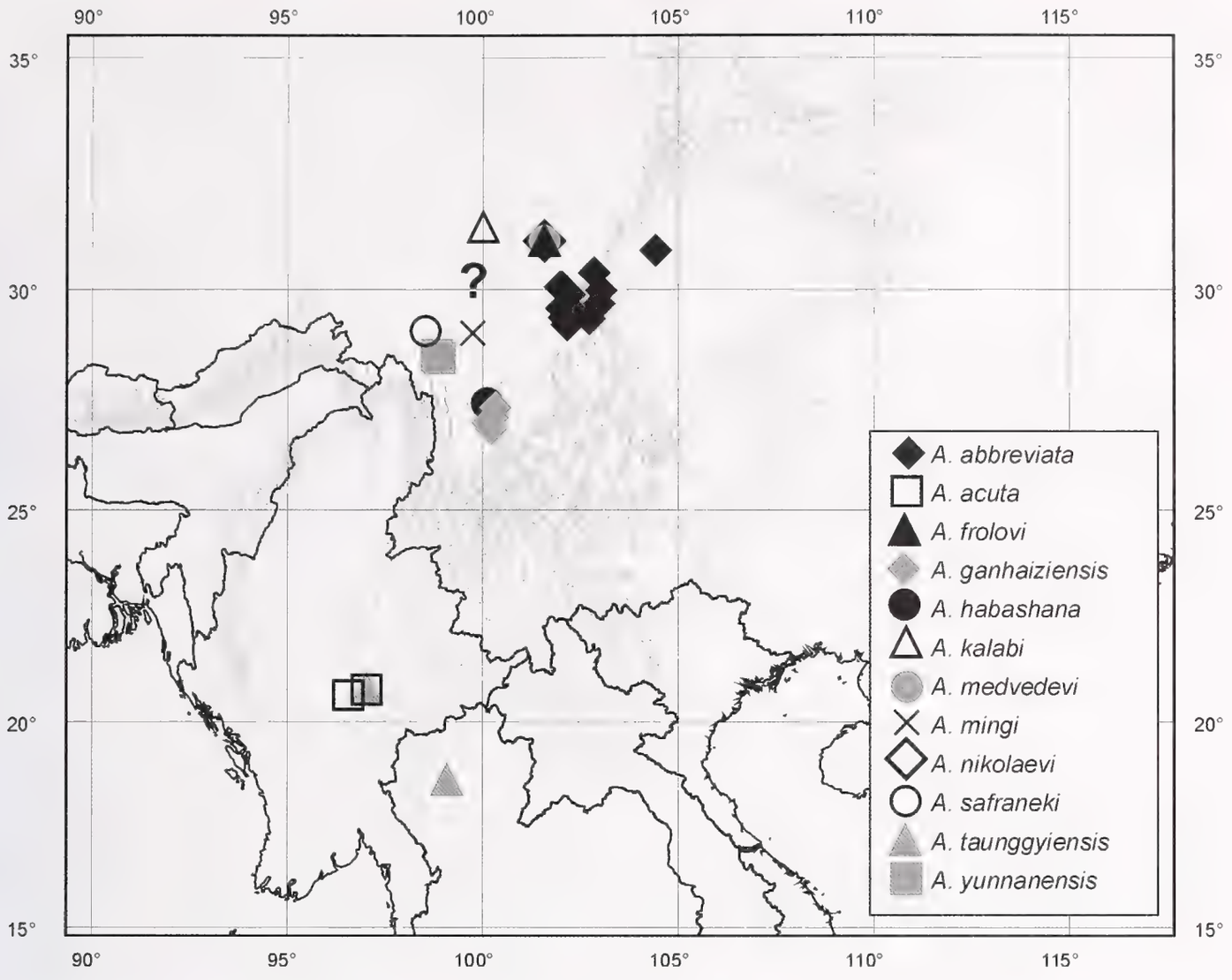

Fig. 7. Distribution of *Archeohomaloplia* species. '?' stands for the not precisely localized collecting locality of *A. yaregongensis* sp. n. in China (Sichuan/ Tibet border).

groups of spines, basal group at first quarter, apical group at second third of metatibial length, basally with a few single, fine setae; external face longitudinally convex, laterally with fine punctures, glabrous; ventrally with a sharp, finely serrate margin, with three robust equidistant setae; internal face laterally with a few punctures bearing each a fine and long seta, apex interiorly deeply excavate at middle and not truncate near tarsal articulation. Meso- and metatarsomeres dorsally glabrous and very minutely punctate, ventrally with sparse, short setae; metatarsomeres ventrally with a finely serrate ridge, beside it with a fine longitudinal carina, first metatarsomere distinctly longer than the following tarsomere and one third of its length longer than the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetric.

Aedeagus: Fig. 6E–G. Habitus: 6H.

Diagnosis. *A. acuta* sp. n. differs from *A. taunggyiensis* sp. n. by the shorter antennal club in male, the darker colour of antenna and legs, and the less dense microtrichomes at apex of elytra.

Variation. Length: 4.0–4.2 mm, length of elytra: 2.4–2.5 mm, width: 2.5 mm. Female specimens are very similar to males but have yellow, slightly shorter antennal clubs, the club is as long as the remaining antennomeres combined.

Remarks. Given the margined ventral hypomeron and the partly reduction of the basal pronotal border, the systematic position of the species is questionable as that of A. taunggyiensis sp. n.

Etymology. The species is named according to the sharply pointed dorsal apophysis of phallobasis, acuta (sharp).

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New species of Sericini from the Himalaya and adjacent mountains (Coleoptera: Scarabaeidae)

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Abstract. Fourteen new species of Sericini are described from Nepal, the eastern Himalaya, and the mountains of Yunnan and Myanmar: *Amiserica michaeli* sp. n., *Gynaecoserica victori* sp. n., *G. aniniensis* sp. n., *Lasioserica hamifer* sp. n., *L.* (s. l.) *imminuta* sp. n., *Serica* (s. str.) *pelelaensis* sp. n., *S.* (s. str.) *panwarensis* sp. n., *S.* (s. str.) *exhausta* sp. n., *S.* (s. str.) *chinhillensis* sp. n., *S.* (s. l.) *langeri* sp. n., *S.* (s. l.) *davidkrali* sp. n., *Sericania khandbariensis* sp. n., *Neoserica* (s.l.) *kachinensis* sp. n., and *N.* (s.l.) *loeffleri* sp. n. The lectotype of *Serica scutellaris* Arrow, 1946 from Myanmar is designated and its male genitalia for the first time figured. New data on distribution of 38 species from the Himalayas are given.

Key words. Bhutan, China, India, Nepal, Arunachal Pradesh, new species, new distribution records, chafers, Sericini.

1. INTRODUCTION

The taxonomy of the fauna of sericine chafer beetles (Sericini) of the Himalayas was revised and reviewed in detail by Ahrens (2004). Subsequently, new data and taxa were added (Ahrens 2005a–e, 2006c, Ahrens & Fabrizi 2009a,b, Ahrens & Pacholátko 2005) and a number of phylogenetic studies explored the diversification and biogeographic patterns of the Himalayan Sericini fauna (Ahrens 2005d, 2006a,b,d–f, 2007a,b).

But still we have to consider the eastern regions of the Himalaya and the adjacent mountain regions of northern Myanmar and southeast China relatively unexplored and this fact hampers more rigorous hypotheses on the diversification of the Himalayan fauna. Recently, new material mainly from Bhutan and Myanmar was sent to us for identification and the results of the examination of this material are presented in this paper. Fourteen new species were discovered and are described herein, and new data on the distribution of 38 additional species are given.

2. MATERIAL AND METHODS

The principal terminologies and methods used for specimen dissection and genital preparation are described in detail in Ahrens (2004). Male genitalia were glued on a small pointed card and photographed in both lateral and dorsal view using a stereomicroscope Leica M125 with a Leica DFC420C digital camera. In the automontage software as implemented in Leica Application Suite (V3.3.0) a number of single focussed images were combined in order to obtain an image that was in focus throughout. The resulting images were subsequently digitally edited to remove errors of the Automontage reconstruction and to obtain a white background.

Abbreviations used

CA	coll. D. Ahrens, ZFMK (Germany);
CMNC	Canadian Museum of Nature, Ottawa (Canada);
CP	coll. P. Pacholátko, Brno (Czech Republic);
NME	Naturkundemuseum Erfurt (Germany);
NMPC	Natural History Museum Prague collection (Czech Republic);
NHRS	Naturhistoriska Riksmuseet Stockholm (Sweden);
ZFMK	Zoologisches Forschungsmuseum A. Koenig, Bonn (Germany);
ZIN	Zoological Institute, Russian Academy of Sciences, St. Petersburg (Russia).

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Fig. 1. **A–D.** *Serica pelelaensis* sp. n. (holotype); **E–H.** *S. exhausta* sp. n. (holotype); **A, E.** Aedeagus, left side lateral view; **C, G**: Aedeagus, right side lateral view; **B, F.** parameres, dorsal view; **D, H.** Habitus. Scale: 0.5 mm. Habitus not to scale.

3. NEW SPECIES

***Serica* (s. str.) *pelelaensis* sp. n.** (Fig. 1A–D)

Type material examined. Holotype: ♂ "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279m, leg. V. Siniaev" (ZFMK). Paratype: 1 ♂ "Bhutan: Bumthang, 27°31'N, 90°33'E 7–9.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

Description. Length: 9.1 mm, length of elytra: 6.9 mm, width: 5.1 mm. Body oblong, dark brown, antenna yellowish, legs and pronotal margins reddish brown, elytra with indistinct irregular dark spots, dorsal surface dull; frons with dense, erect setae.

Labroclypeus narrowly trapezoidal, slightly wider than long, widest at base, lateral margins convergent and in basal three quarters straight, anteriorly convex, anterior angles weakly rounded, anteriorly deeply and widely sinuate medially, lateral margins weakly reflexed, anterior margin strongly reflexed; surface flat and shiny, finely and moderately densely punctate, with a few superficial transverse wrinkles, covered with long, erect setae throughout; frontoclypeal suture indistinctly incised, slightly elevated and weakly convex; smooth area anterior to eye large and convex, approximately twice as wide as long; ocular canthus very short and slender (1/6 of ocular diameter), smooth, with one short terminal seta. Frons completely dull and flat, with fine and moderately dense punctures and dense, long erect setae. Eyes very large, ratio diameter/ interocular width: 0.89. Antenna yellowish with ten

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antennomeres; antennomeres three to five slightly wider than long, antennomere six and seven transverse and short; club with three antennomeres, 2.5 times as long as remaining antennomeres combined and strongly reflexed outward. Mentum weakly elevated, anteriorly flattened. Labrum transverse, short, moderately produced, moderately sinuate medially.

Pronotum transverse, widest shortly before base, lateral margins moderately convex and slightly convergent anteriorly, anterior angles moderately produced and blunt, distinctly rounded at the tip, posterior angles strongly rounded, anterior margin medially with a wide marginal line and strongly convexly produced medially; surface not densely and finely punctate, a few punctures with white, short and appressed setae; anterior and lateral borders as well as sides of the base densely setose; hypomeron not carinate at base. Scutellum slender and long, triangular, finely and densely punctate, with a smooth longitudinal area medially, glabrous.

Elytra oblong, widest at apical third, striae distinctly impressed, finely and densely punctate, intervals slightly convex, with fine, moderately dense punctures concentrated along striae, dark spots completely smooth, intervals with fine, short, white setae which are sparsely scattered, some are appressed, others semi-erect; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border chitinous, without microtrichomes (magnification 100x).

Ventral surface dull, finely and not densely punctate, moderately densely setose, metacoxa glabrous, with a few long setae only laterally; abdominal sternites finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.41. Pygidium evenly moderately convex and dull, finely and densely punctate, with smooth and slightly elevated midline, with sparsely scattered, moderately dense, long setae.

Legs very slender; femora with two longitudinal rows of setae, coarsely and not densely punctate between the rows, with robust setae on basal half; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest at apex, ratio of width/ length: 1/ 4.8, dorsally sharply carinate, with two groups of spines, basal group at half, apical group at three quarters of metatibial length, basally with a few single robust setae; longitudinally concave externally, finely and sparsely punctate, without distinct longitudinal wrinkles; ventral edge serrated, with two very widely separated fine setae, medial face with a shallow longitudinal groove medially, sparsely punctate and with a few fine setae, apex interiorly near tarsal articulation distinctly but bluntly truncate. Tarsomeres ventrally with sparse, short setae, dorsally smooth; metatarsomeres laterally and dorsally carinate, with a strongly serrated ridge ventrally, first metatarsomere almost as long as the two following tarsomeres combined and one third of its length longer than the upper tibial spur; mesotarsomeres weakly carinate laterally and dorsally, punctures and wrinkles lacking. Protibia long, bidentate, external edge with numerous small teeth, anterior claws asymmetrical, basal tooth of inner claw lobiform and half as long as apical tooth, which is straight.

Aedeagus: Fig. 1A–C. Habitus: Fig. 1 D.

Variation. Length: 9.1–10.9 mm, length of elytra: 6.9–7.9 mm, width: 5.1–5.7 mm. ♀: unknown.

Diagnosis. *Serica pelelaensis* sp. n. is in external and genital morphology very similar to *S. chuttana* Ahrens, 1999 from Nepal. The new taxon differs by the lobiform basal tooth of the inner protarsal claw, the slightly wider metatibia and the shape of parameres. In S. *pelelaensis* the right paramere is apically distinctly curved externally (dorsal view) but straight in lateral view; the left paramere is subbasally not widened medially and at apex more evenly curved externally.

Etymology. The name is derived from the name of the type locality, Pele La.

***Serica* (s. str.) *exhausta* sp. n.** (Fig. 1E–H)

Type material examined. Holotype: ♂ "Bhutan: Bumthang, 27°31'N, 90°33'E 7–9.vii.2009, 2420 m, leg. V. Siniaev" (ZFMK). Paratypes: 1 ♀ same data as holotype (ZFMK), 1 ♂ "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 17.vii.2009, 3279 m leg. V. Siniaev" (ZFMK), 6 ♂♂ "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279 m, leg. V. Siniaev" (ZFMK).

Description. Length: 7.6 mm, length of elytra: 5.6 mm, width: 4.2 mm. Body oblong, dark brown, antenna yellowish, legs, labroclypeus, elytra and pronotal lateral margins reddish brown, elytra with indistinct irregular dark spots, dorsal surface dull; frons and pronotum with moderately dense, erect setae.

Labroclypeus subrectangular, distinctly wider than long, widest at base, lateral margins in basal half parallel, anteriorly weakly convex and convergent, anterior angles weakly rounded, anteriorly deeply and widely sinuate medially, lateral margins moderately reflexed, anterior margin strongly reflexed; surface flat and shiny, coarsely and densely punctate, punctures partly only superficial but with a few superficial transverse wrinkles, with moderately dense, long, erect setae throughout; frontoclypeal

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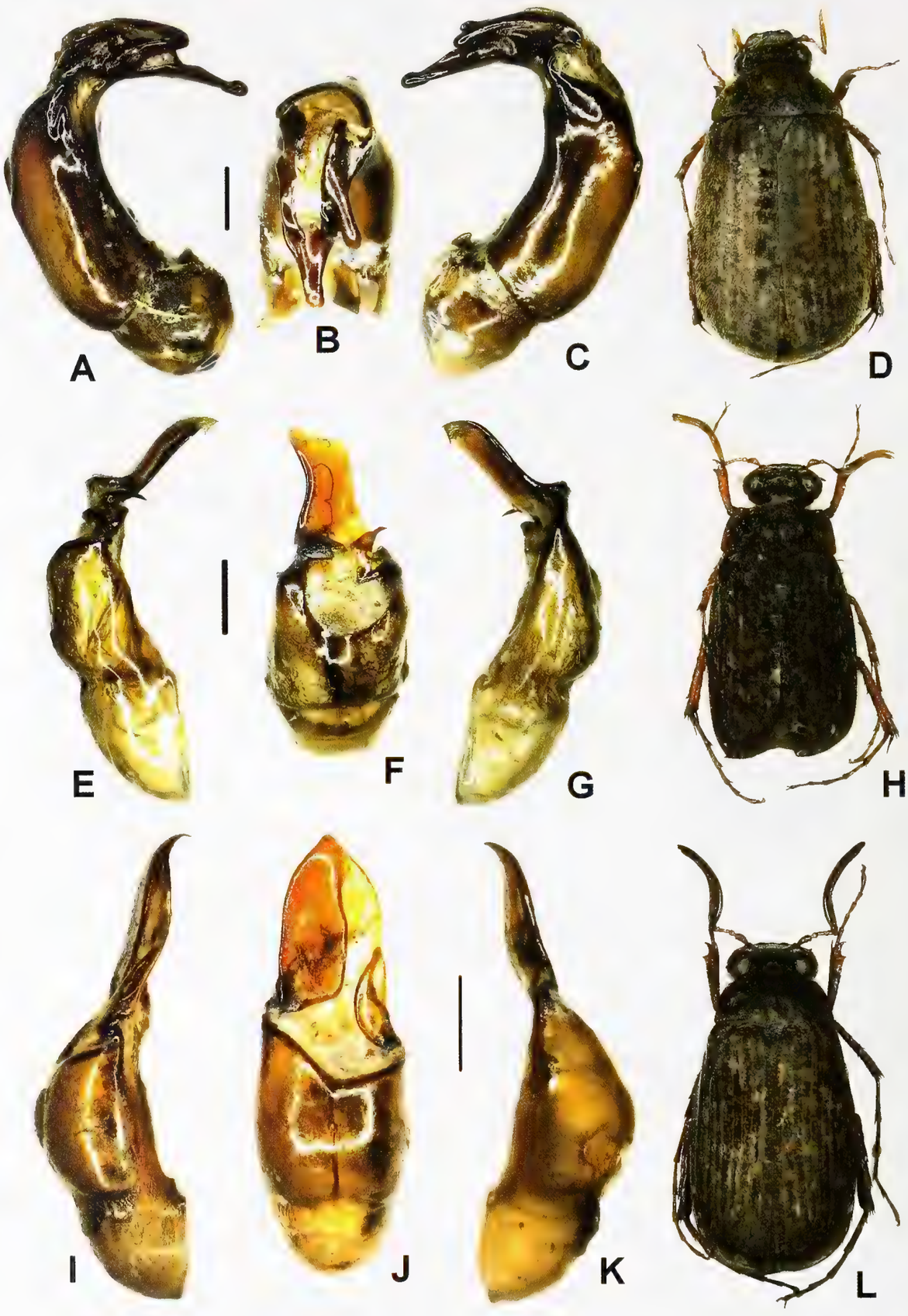

Fig. 2. **A–D.** *Serica langeri* sp. n. (holotype); **E–H.** *S. chinhillensis* (holotype); **I–L.** *S. panwarensis* sp. n. (holotype); **A, E, I.** Aedeagus, left side lateral view; **C, G, K.** Aedeagus, right side lateral view; **B, F, J.** parameres, dorsal view; **D, H, L.** Habitus. Scale: 0.5 mm. Habitus not to scale.

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suture indistinctly incised, slightly elevated and weakly convex; smooth area anterior to eye large and convex, approximately 1.5 times as wide as long; ocular canthus short and slender (1/4 of ocular diameter), smooth, with one short terminal seta. Frons completely dull and flat, with fine and moderately dense punctures and moderately dense, long erect setae. Eyes large, ratio diameter/ interocular width: 0.73. Antenna yellowish with nine antennomeres; antennomeres three to five slightly wider than long, antennomere six transverse and short; club with three antennomeres, 2.5 times as long as remaining antennomeres combined and strongly reflexed outward. Mentum weakly elevated, anteriorly flattened. Labrum transverse, short, moderately produced, moderately sinuate medially.

Pronotum transverse, widest at base, lateral margins moderately convex and convergent anteriorly, anterior angles distinctly produced, slightly rounded at the tip, posterior angles strongly rounded, anterior margin medially with a broad marginal line and strongly convexly produced medially; surface not densely and finely punctate, a few larger punctures with white, short and appressed or longer, erect setae; anterior and lateral borders as well as sides of the base densely setose; hypomeron not carinate at base. Scutellum slender and long, triangular, finely and densely punctate, with a few minute setae in the punctures.

Elytra oblong, widest at apical third, striae distinctly impressed, finely and densely punctate, intervals slightly convex, with fine, moderately dense punctures concentrated along striae, dark spots completely smooth, intervals with fine, short, white setae which are sparsely scattered, some are appressed, others semi-erect, beside the scutellum with a few long, erect setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border chitinous, without microtrichomes (magnification 100x).

Ventral surface dull, finely and not densely punctate, moderately densely setose, metacoxa glabrous, with a few long setae only laterally; abdominal sternites finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.61. Pygidium moderately convex and dull, finely and densely punctate, with smooth and slightly elevated midline, with moderately dense, long setae.

Legs very slender; femora with two longitudinal rows of setae, coarsely and not densely punctate between the rows, with robust setae on basal half; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest at apex, ratio of width/ length: 1/ 5.0, dorsally sharply carinate, with two groups of spines, basal group at half, apical group at three quarters of metatibial length, basally with a few single robust setae; longitudinally concave externally, finely and sparsely punctate, with longitudinal wrinkles; ventral edge serrated, with two very widely separated fine setae, medial face with a shallow longitudinal groove medially, sparsely punctate but glabrous, apex interiorly near tarsal articulation distinctly but bluntly truncate. Tarsomeres ventrally with sparse, very minute setae, dorsally smooth; metatarsomeres laterally and dorsally carinate, with a strongly serrated ridge ventrally, first metatarsomere as long as the two following tarsomeres combined and almost twice as long as the upper tibial spur; mesotarsomeres weakly carinate laterally and dorsally, punctures and wrinkles lacking. Protibia long, bidentate, external edge with numerous small teeth, anterior claws asymmetrical, basal tooth of inner claw lobiform and half as long as the straight apical tooth. Aedeagus: Fig. 1E–G. Habitus: Fig. 1H.

Variation. Length: 7.6–9.0 mm, length of elytra: 5.6–6.5 mm, width: 4.2–4.3 mm. ♀: larger (9.0 mm), antennal club combined of three antennomeres, shorter than the remaining antennomeres combined; ratio of width/ length of metatibia: 1/ 4.2.

Diagnosis. *Serica exhausta* sp. n. is in genital morphology very similar to *S. guidoi* Ahrens, 1999. The new taxon differs by the distinctly longer antennal club in male, the sparse erect setae on disc of pronotum, and the shape of the slightly shorter parameres. The left paramere is almost straight at the external margin and evenly convexly widened interiorly at basal third; the right paramere is completely straight (dorsal view).

Etymology. The name is derived from the Latin word, *exhaustus*, tired.

***Serica* (s. str.) *panwarensis* sp. n.** (Fig. 2I–L)

Type material examined. Holotype: ♂ "Myanmar (Burma) Provinz Kanchin State, ca. 20km N von Panwar, 23.V.2006, leg. Michael Langer, Stefan Naumann & Swen Löffler Coll. M. Langer/ Nachtfang/ 2180 m N25°43'30.2" E098°23'35.3" " (ZFMK).

Description. Length: 8.3 mm, length of elytra: 5.9 mm, width: 4.2 mm. Body oblong, dark brown, antenna brown, tarsi and pronotal margins reddish brown, elytra with indistinct irregular dark spots, dorsal surface dull and almost glabrous.

Labroclypeus narrow, as wide as long, widest at base, lateral margins weakly convex and convergent anteriorly, anterior angles acute, anteriorly deeply and widely sin-

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uate medially, margins moderately reflexed; surface flat and moderately shiny, densely punctate, fine punctures mixed with coarser ones, with a few long, erect setae behind anterior margin; frontoclypeal suture indistinctly incised, not elevated and weakly convex; smooth area anterior to eye large and convex, approximately twice as wide as long; ocular canthus very long and slender (almost half of ocular diameter), smooth, without short terminal seta. Frons completely dull, with fine and moderately dense punctures, with a few long erect setae beside the eyes. Eyes very large, ratio diameter/ interocular width: 0.91. Antenna with nine antennomeres; antennomeres three to five slightly wider than long, antennomere six transverse; club with three antennomeres, 2.5 times as long as remaining antennomeres combined and strongly reflexed outward. Mentum very weakly convexly elevated. Labrum transverse, short, moderately produced, weakly sinuate medially.

Pronotum subtrapezoidal, widest at base, lateral margins almost straight and convergent anteriorly, in anterior quarter slightly convex, anterior angles moderately produced and strongly rounded, posterior angles almost rectangular and weakly rounded in the tip, anterior margin medially with a broad marginal line and strongly convexly produced medially; surface densely and coarsely punctate, a few punctures with scale-like, white, short and appressed setae; lateral borders sparsely setose; hypomeron not carinate at base. Scutellum slender and long, triangular, finely and densely punctate, glabrous.

Elytra oblong, widest at apical third, striae moderately impressed, finely and densely punctate, intervals flat, with fine, dense punctures concentrated along striae, dark spots partly widely extended and completely smooth, intervals with sparse, scale-like, short, white setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border chitinous, without microtrichomes (magnification 100x).

Ventral surface dull, finely and not densely punctate, moderately densely setose, metacoxa glabrous, with a few long setae only laterally; abdominal sternites finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.33. Pygidium weakly convex and dull, coarsely and densely punctate, with a smooth and very slightly elevated midline, with sparsely scattered, moderately dense, long setae.

Legs very slender; femora with two longitudinal rows of setae, coarsely and not densely punctate between the rows, with robust setae on basal half; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest at apex, ratio of width/ length: 1/ 5.0, dorsally sharply carinate, with two groups of spines, basal group at one third, apical group at three quarters of metatibial length, basally with a few single robust setae; longitudinally slightly concave externally, finely and sparsely punctate, with numerous longitudinal wrinkles; ventral edge serrated, with two very widely separated fine setae, medial face sparsely punctate and with a few fine setae, with numerous longitudinal wrinkles, apex interiorly near tarsal articulation distinctly but bluntly truncate. Tarsomeres ventrally with sparse, short setae; metatarsomeres laterally and dorsally carinate and with robust longitudinal wrinkles, with a strongly serrated ridge ventrally, first metatarsomere slightly longer than the two following tarsomeres combined and twice as long as the upper tibial spur; mesotarsomeres weakly carinate laterally only, with fine punctures and longitudinal wrinkles. Protibia long, bidentate, external edge with numerous small teeth, anterior claws asymmetrical, basal tooth of inner claw small but lobiform and a quarter as long as the straight apical tooth.

Aedeagus: Fig. 2I–K. Habitus: Fig. 2L.

Diagnosis. *Serica panwarensis* sp. n. is in external and genital morphology very similar to *S. sudhausi* Ahrens, 2005. The new taxon differs by its darker colour, slightly larger body size and the shape of parameres. The left paramere is almost half as long as the right (in *S. sudhausi* only one third as long as right paramere) and narrowed already before the middle; the right paramere is narrowed more distally and abruptly toward apex.

Etymology. The species is named according to the village in vicinity of the type locality, Panwar.

***Serica* (s. str.) *chinhillensis* sp. n.** (Fig. 2E–H)

Type material examined. Holotype: ♂ "Myanmar (Burma) Chin State; Chin Hills 30 miles camp (Orchid station) 24.–27.VI.2008 leg. M. Langer" (ZFMK). Paratypes. 1 ♂, 1 ♀ same data as holotype (ZFMK).

Description. Length: 8.8 mm, length of elytra: 6.2 mm, width: 4.4 mm. Body oblong, dark brown, antenna and legs yellowish, elytral striae and pronotal lateral margins reddish brown, dorsal surface dull; frons, pronotum and elytra with sparse, erect setae.

Labroclypeus distinctly wider than long, widest at base, lateral margins moderately convex and convergent, anterior angles weakly rounded, anteriorly not deeply but widely sinuate medially, lateral margins moderately reflexed, anterior margin strongly reflexed; surface flat and shiny, coarsely and densely punctate, with a few long, erect setae behind the anterior margin; frontoclypeal suture indistinctly incised, slightly elevated and weakly convex;

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smooth area anterior to eye large and flat, approximately 1.5 times as wide as long; ocular canthus moderately long and slender (1/3 of ocular diameter), smooth, with one short terminal seta. Frons completely dull and flat, with fine and moderately dense punctures, with long, erect setae beside the eyes and on the posterior part. Eyes large, ratio diameter/ interocular width: 0.87. Antenna with ten antennomeres; antennomeres three to five slightly wider than long, antennomere six and seven transverse and short; club with three antennomeres, twice as long as remaining antennomeres combined and strongly reflexed outward. Mentum weakly elevated, anteriorly flattened. Labrum transverse, short, moderately produced, moderately sinuate medially.

Pronotum transverse, widest at base, lateral margins almost straight and weakly convergent anteriorly, in anterior quarter moderately convex, anterior angles weakly produced, moderately rounded at the tip, posterior angles weakly rounded, anterior margin medially with a broad marginal line and strongly convexly produced medially; surface not densely and finely punctate, a few larger punctures with white, short and appressed setae, otherwise only with very minute setae in the punctures; anterior and lateral borders long and densely setose; hypomeron not carinate at base. Scutellum slender and long, triangular, finely and moderately densely punctate, with a few minute setae in the punctures.

Elytra oblong, widest at apical third, striae weakly impressed, finely and densely punctate, intervals slightly convex, with fine, moderately dense punctures concentrated along striae, dark spots completely smooth, intervals with fine, short, white setae which are sparsely scattered, sutural and lateral intervals with a few long, erect setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border finely membranous, membranous rim composed of fine microtrichomes (magnification 100x).

Ventral surface dull, finely and not densely punctate, moderately densely setose, metacoxa glabrous, with a few long setae only laterally; abdominal sternites finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.34. Pygidium strongly convex and dull, finely and densely punctate, smooth midline lacking, with dense setae, moderately long ones mixed with long erect setae.

Legs very slender; femora with two longitudinal rows of setae, coarsely and not densely punctate between the rows, with robust setae on basal half; metafemur dull, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest at apex, ratio of width/ length: 1/ 4.5, dorsally sharply carinate, with two groups of spines, basal group at half, apical group at three quarters of metatibial length, basally with a few single, robust setae; longitudinally concave externally, finely and sparsely punctate, with a few irregular wrinkles on dorsal portion; ventral edge serrated, with two very widely separated robust setae interspersed with two finer ones, medial face with a shallow longitudinal groove medially, sparsely punctate and along the dorsal margin with a row of very robust punctures bearing each a short seta, apex interiorly near tarsal articulation distinctly but bluntly truncate. Tarsomeres ventrally with sparse, very minute setae, dorsally smooth; metatarsomeres laterally and dorsally carinate, with a strongly serrated ridge ventrally, first metatarsomere as long as the two following tarsomeres combined and twice as long as the upper tibial spur; mesotarsomeres not carinate, punctures and wrinkles lacking. Protibia moderately long, bidentate, external edge with a few small teeth at base, anterior claws symmetrical, basal tooth of inner claw normally pointed as the external one.

Aedeagus: Fig. 2E–G. Habitus: Fig. 2H.

Variation Length: 8.8–10.1 mm, length of elytra: 6.2–7.0 mm, width: 4.4–5.2 mm. ♀: larger (10.1 mm), antennal club combined of three antennomeres, as long as the remaining antennomeres combined; ratio of width/ length of metatibia: 1/ 4.2, eyes smaller: ratio diameter/ interocular width: 0.56.

Diagnosis. The new species differs from *S. dolens* Ahrens, 2005 by the symmetric protarsal claws and the different shape of parameres. The right parameres is in *S. chinhillensis* medially stronger narrowed (dorsal view) and apically stronger pointed; the left paramere is much shorter and stronger curved than in *S. dolens*.

Etymology. The name of the species is derived from its occurrence in Chin Hills.

***Serica* (s. l.) *langeri* sp. n.** (Fig. 2A–D)

Type material examined. Holotype: ♂ "Myanmar (Burma) Provinz Kanchin State, Ca. 20 km N von Kanphant, 23.05.2006, 2180m, N25°43'30.2" E098°23'35.3", Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (ZFMK). Paratypes: 9 ♂♂ same data as holotype (ZFMK, CML).

Description. Length: 9.9 mm, length of elytra: 7.2 mm, width: 5.3 mm. Body elongate egg-shaped, dark brown, antenna yellowish, legs reddish brown, dorsal surface dull and densely covered with short yellow setae being bent backwards.

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Fig. 3. **A–D.** *Serica scutellaris* Arrow, 1946 (lectotype); **E–H.** *S. davidkrali* sp. n. (holotype); **A, E.** Aedeagus, left side lateral view; **C, G.** Aedeagus, right side lateral view; **B, F.** parameres, dorsal view; **D, H.** Habitus. Scale: 0.5 mm. Habitus not to scale..

Labroclypeus subtrapezoidal, distinctly wider than long, widest at base, lateral margins moderately convex and strongly convergent anteriorly, anterior angles acute, anteriorly deeply but not very widely sinuate medially, margins moderately reflexed; surface flat and shiny, coarsely and densely punctate, finely setose on posterior half, anteriorly glabrous except a few robust, long, erect setae behind the anterior margin; frontoclypeal suture finely incised, slightly elevated and weakly convex; smooth area anterior to eye large and flat, approximately twice as wide as long; ocular canthus moderately long and slender (1/3 of ocular diameter), with a few fine punctures bearing each a short seta. Frons completely dull and flat, with fine and very dense punctures, evenly covered with short yellow setae being bent backwards. Eyes moderately large, ratio diameter/ interocular width: 0.56. Antenna with ten antennomeres; antennomeres three to five slightly wider than long, antennomere six and seven transverse and short; club with three antennomeres, 1.3 times as long as remaining antennomeres combined and straight. Mentum weakly elevated, anteriorly flattened. Labrum transverse, short, strongly produced along the middle, moderately sinuate medially.

Pronotum subtrapezoidal, widest shortly before base, lateral margins evenly convex and strongly convergent anteriorly, anterior angles distinctly produced and acute, posterior angles strongly rounded, anterior margin medially with a fine marginal line and convexly produced medially; surface densely and finely punctate, densely setose; lateral borders sparsely setose; hypomeron not carinate at base. Scutellum large, triangular, finely and very densely punctate, pilosity as in pronotum.

Elytra oval, strongly widened posteriorly, widest at apical third, striae weakly impressed, finely and densely punctate, intervals flat, with fine, very dense punctures, dark spots with less dense punctures, intervals with fine,

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short pilosity as in pronotum, lateral intervals with a few longer, erect setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border with a fine membranous rim composed of minute microtrichomes (magnification 100x).

Ventral surface dull, finely and densely punctate, including metacoxa and abdominal sternites densely shortly setose; abdominal sternites with a transverse row of coarse punctures, each bearing a long seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.26. Pygidium strongly convex and dull, finely and densely punctate, smooth midline narrow, present only on posterior half, with dense short setae, apically with a few long, erect setae.

Legs slender; femora with two longitudinal rows of setae, coarsely and densely punctate between the rows, with robust setae on basal half; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest shortly before apex, ratio of width/ length: 1/ 4.4, dorsally sharply carinate, with two groups of spines, basal group at half, apical group at three quarters of metatibial length, basally with a few single, robust setae; finely and sparsely punctate externally, with a few irregular wrinkles on dorsal portion; ventral edge serrated, with two very widely separated robust; medial face glabrous, with a number of irregular wrinkles on dorsal portion, apex interiorly near tarsal articulation distinctly but bluntly truncate. Tarsomeres ventrally with sparse, very minute setae, dorsally smooth; metatarsomeres laterally and dorsally carinate, with a strongly serrated ridge ventrally, first metatarsomere as long as the two following tarsomeres combined and twice as long as the upper tibial spur; mesotarsomeres not carinate, punctures and wrinkles lacking. Protibia moderately long, bidentate, external edge with a few small teeth at base, anterior claws symmetrical, basal tooth of inner claw normally pointed as the external one.

Aedeagus: Fig. 2A–C. Habitus: Fig. 2D.

Variation. Length: 8.3–10.8 mm, length of elytra: 6.5–7.3 mm, width: 5.2–5.7 mm. Female unknown.

Diagnosis. The new species differs from *S. deuvei* Ahrens, 2005 by the different shape of parameres: the dorsal lobe of the right paramere is narrower and distinctly longer, the left paramere is dorsoventrally more extended and slightly curved inward.

Etymology. The species is dedicated to its collector, Michael Langer.

***Serica* (s. l.) *scutellaris* Arrow, 1946** (Fig. 3A–D)
Serica scutellaris Arrow, 1946: 7.

Type material examined. Lectotype (here designated): ♂ "N.E. Burma Kambaiti, 2000m 21/5.1934 Malaise/ Typus/ Serica scutellaris n.sp. Arrow" (NHRS). Paralectotype: 1 ♀ "N.E. Burma Kambaiti, 2000m 29/5.1934 Malaise/ Allotypus/ Serica scutellaris n.sp. Arrow" (NHRS), 1 ♀ "Co-type/ ♀/ N.E. Burma Kambaiti, 2000m 15/5.1934 Malaise/ N.E. Burma. E. Malaise B.M. 1945-71./ Serica scutellaris co-type Arrow" (BMNH).

Additional material examined. 1 ♂ "Myanmar (Burma) Provinz Kanchin State, Mt. Emaw Bum nach Kanphant, 28.05.2006, N26°09'23.2" E098°31'16.4" Waldcamp Holzmeiler, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (ZFMK). Paratype: 1 ♂ "Myanmar (Burma) Provinz Kanchin State, Camp Wald, Straße von Kanphant zum Mt. Emaw Bum, 25.05.2006, 2400m, N26°09'38.8" E098°30'53.5', Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (CML), 3 ♀♀ "Myanmar (Burma) Provinz Kanchin State, Mt. Emaw Bum nach Kanphant, 28.V.2006, leg. Michael Langer, Stefan Naumann & Swen Löffler Coll. M. Langer/ Waldcamp Holzmeiler H= 2358m N26°09'23.2" E098°31'16.4" " (CML, ZFMK).

Redescription of male. Length: 7.3 mm, length of elytra: 5.3 mm, width: 4.3 mm. Body oval-elongate, brown, antenna, legs and elytra yellowish brown, the latter with numerous small, irregular dark spots, dorsal surface shiny, head sparsely setose, dorsal face of pronotum and elytra almost glabrous.

Labroclypeus subtrapezoidal, distinctly wider than long, widest at base, lateral margins in basal half straight and convergent, anteriorly stronger rounded, anterior angles strongly rounded, anteriorly deeply sinuate medially, margins moderately reflexed; surface flat and shiny, moderately and densely punctate, with a transverse row of few erect setae behind anterior margin; frontoclypeal suture distinctly incised, weakly elevated and slightly angled medially; smooth area anterior to eye wide, nearly flat, approximately 1.5 times as wide as long; ocular canthus short and narrow (1/4 of ocular diameter), impunctate, with one short terminal seta. Frons completely shiny, with moderately coarse, dense punctures, with a few erect setae beside eyes and behind frontoclypeal suture. Eyes moderately large, ratio diameter/ interocular width: 0.58. Antenna with nine antennomeres; antennomeres three and four longer than wide, antennomeres five and six transverse, club with three antennomeres, 1.2 times as long as the remaining antennomeres combined and straight. Mentum elevated and slightly flattened anteriorly. Labrum transverse, short, moderately produced medially, with deep median sinuation.

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Pronotum subrectangular, widest at base, lateral margins parallel, convex and strongly convergent in anterior third, anterior angles moderately produced and blunt, posterior angles blunt and only slightly rounded in the tip; anterior margin with a fine marginal line, convexly produced medially; surface densely and coarsely punctate, punctures on sides with very minute setae; anterior and lateral border sparsely setose; hypomeron basally produced and distinctly carinate. Scutellum dull, slender and long, triangular, with fine, dense punctures, glabrous.

Elytra oblong, widest at posterior quarter, striae indistinctly impressed, finely and densely punctate, intervals weakly convex, with fine, dense punctures concentrated along striae, odd intervals with short, white appressed setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura sparsely setose, apical border with fine fringe of microtrichomes (100x).

Ventral surface dull, finely and densely punctate, almost glabrous, metacoxa without setae laterally; abdominal sternites dull, finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.27. Pygidium moderately convex and dull, coarsely and densely punctate, with a narrow smooth midline, with moderately dense and long setae, setae apically longer.

Legs slender; femora with two longitudinal rows of setae, finely and sparsely punctate between the rows; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and not very long, widest at apex, ratio of width/ length: 1/ 3.9, dorsally moderately carinate, with two groups of spines, basal one just before middle, apical group at three quarters of metatibial length, basally with a few fine, single setae; externally moderately longitudinally concave, finely and sparsely punctate, without wrinkles; ventral edge finely serrated, with two widely separated, more robust setae, medial face with fine, longitudinally impressed and partly dense punctures, glabrous, apex interiorly near tarsal articulation shallowly truncate. Tarsomeres smooth, mesotarsomeres neither laterally nor dorsally carinate, ventrally with sparse, short setae; metatarsomeres laterally and dorsally moderately carinate, ventrally with a strongly serrated ridge, first metatarsomere distinctly shorter than the two following tarsomeres combined and a third of its length longer than the upper tibial spur. Protibia moderately long, bidentate, external margin at middle bluntly widened; anterior claws symmetrical, basal tooth of inner claw truncate at apex.

Aedeagus: Fig. 3A–C. Habitus: Fig. 3D.

Remarks. *Serica scutellaris* is in external shape similar to the species of *Serica* (s. str.), but it differs by having the hypomeron distinctly carinate. Since no holotype was designated in the original publication the unique male syntype was designated as lectotype.

Variation. Length: 7.3–8.4 mm, length of elytra: 5.3–6.1 mm, width: 4.3–4.4 mm. Female with only slightly smaller eyes, ratio of ocular diameter/ interocular width: 0.58; antennal club slightly shorter than the remaining antennomeres combined.

Serica (s. l.) *davidkrali* sp. n. (Fig. 3E–H)

Type material examined. Holotype: ♂ "Yunnan 2800–3000m 25.12N 100.24E Weibaoshan mts. 29.–30.6.92 David Kral leg./ Coll. David Kral, Praha/ 558 Sericini Asia spec." (NMPC). Paratypes: 1 ♂, 1 ♀ "Yunnan 2800–3000m 25.12N 100.24E Weibaoshan mts. 29.–30.6.92 David Kral leg." (NMPC), 2 ♂♂, 1 ♀ "Yunnan 2800–3000m 25.12N 100.24E Weibaoshan mts. 29.–30/6.92 Vit Kuban leg." (CA).

Description. Length: 7.8 mm, length of elytra: 5.4 mm, width: 4.0 mm. Body oval-elongate, dark brown, antenna, legs and elytra yellowish brown, the latter with numerous small, irregular dark spots, dorsal surface shiny, dorsal face sparsely setose.

Labroclypeus subtrapezoidal, slightly wider than long, widest at base, lateral margins weakly convex and convergent anteriorly, anterior angles strongly rounded, anteriorly deeply sinuate medially, margins moderately reflexed; surface flat and shiny, moderately and densely punctate, with a few superficial transversal wrinkles laterally, behind anterior margin with a transverse row of few erect setae, otherwise glabrous; frontoclypeal suture distinctly incised and elevated, slightly angled medially; smooth area anterior to eye wide, nearly flat, approximately 1.5 times as wide as long; ocular canthus short and narrow (1/5 of ocular diameter), impunctate, with one short terminal seta. Frons completely shiny, with moderately coarse, irregularly dense punctures, with a few erect setae beside eyes. Eyes large, ratio diameter/ interocular width: 0.81. Antenna with nine antennomeres; antennomeres three and four longer than wide, antennomeres five and six transverse, club with three antennomeres, 1.2 times as long as the remaining antennomeres combined and straight. Mentum elevated and slightly flattened anteriorly. Labrum transverse, short, moderately produced medially, with deep median sinuation.

Pronotum subrectangular, widest at base, lateral margins parallel, convex and strongly convergent in anterior third, anterior angles moderately produced and blunt, posterior angles blunt and only slightly rounded in the tip; anteri-

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or margin with a fine marginal line, convexly produced medially; surface densely and coarsely punctate, shiny, beside the lateral and anterior margin narrowly dull, punctures on sides with very minute setae; anterior and lateral border sparsely setose; hypomeron basally produced and distinctly carinate. Scutellum dull, slender and long, triangular, with fine, dense punctures, glabrous.

Elytra oblong, widest at posterior quarter, striae indistinctly impressed, finely and densely punctate, intervals weakly convex, with fine, dense punctures concentrated along striae, odd intervals with short, white appressed setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border with fine fringe of microtrichomes (100x).

Ventral surface dull, finely and densely punctate, almost glabrous, metacoxa without setae laterally; abdominal sternites dull, finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.22. Pygidium moderately convex and dull, coarsely and densely punctate, with a narrow smooth midline, with moderately dense and long setae, setae apically longer.

Legs slender; femora with two longitudinal rows of setae, finely and sparsely punctate between the rows; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin serrated ventrally in apical half and not widened, completely serrated dorsally, in basal half with a few long setae which are half as long as width of metafemur. Metatibia slender and long, widest at apex, ratio of width/ length: 1/ 4.7, dorsally moderately carinate only in apical third, basally almost longitudinally convex, with two groups of spines, basal one just before middle, apical group at three quarters of metatibial length, basally with a few fine, single setae; externally weakly longitudinally concave, finely and sparsely punctate, without wrinkles; ventral edge finely serrated, with two widely separated, more robust setae, between them a finer one at half of their distance; medial face with sparse, fine, longitudinally impressed punctures, glabrous, apex interiorly near tarsal articulation shallowly truncate. Tarsomeres smooth, mesotarsomeres neither laterally nor dorsally carinate, ventrally with sparse, short setae; metatarsomeres laterally and dorsally moderately carinate, ventrally with a strongly serrated ridge, first metatarsomere distinctly shorter than the two following tarsomeres combined and a third of its length longer than the upper tibial spur. Protibia long, bidentate, external margin at middle only weakly widened; anterior claws symmetrical, basal tooth of inner claw truncate at apex.

Aedeagus: Fig. 3E–G. Habitus: Fig. 3H.

Diagnosis. *Serica* (s. l.) *davidkrali* sp. n. is similar to *Serica* (s. l.) *scutellaris*. It differs by the larger eyes, the narrower labroclypeus, its narrower metatibia and the longer protibia lacking the blunt lateral median extension. Additionally, both differ significantly in shape of the aedeagus: the lateral apophysis of phallobasis is evenly pointed in *S. davidkrali* sp. n. while in *S. scutellaris* it is abruptly rounded at apex; in *S. scutellaris* the right branch of the right paramere is dorsoventrally more widened and abruptly narrowed before the apex, while in *S. davidkrali* sp. n. it is fine and evenly narrowed towards the apex.

Variation. Length: 7.8–8.8 mm, length of elytra: 5.4–6.1 mm, width: 4.0–4.3 mm. Female slightly larger than male, eyes smaller (ratio ocular diameter/ interocular width: 0.6).

Etymology. The species is dedicated to my friend, David Král, Prague, who was one of the collectors of this new species.

Sericania khandbariensis sp. n. (Fig. 4A–D)

Type material examined. Holotype: ♂ "Nepal, Khandbari District/ For. NE Kuwapani 2500 m, 28.III.82 A. & Z. Smetana" (CMNC). Paratypes: 1 ♂ "Nepal, Khandbari District/ For. NE Kuwapani 2500 m, 25.III.82 A. & Z. Smetana" (CA), 1 ♀ "Nepal, Khandbari District Sagranti-Kuwapani 2200–2400 m, 4.–6.IV.84 Smetana & Löbl" (CMNC).

Description. Length: 6.5 mm, length of elytra: 4.9 mm, width: 3.5 mm. Body oblong, yellowish brown, entirely shiny, sparsely setose.

Labroclypeus distinctly wider than long, widest at base, lateral margins moderately convex and convergent, anteriorly stronger rounded, anterior angles strongly rounded, anteriorly weakly sinuate medially, margins moderately reflexed; surface flat and moderately shiny, very coarsely and densely punctate, with a transverse row of few erect setae immediately behind anterior margin; frontoclypeal suture indistinctly incised, not elevated and slightly angled medially; smooth area anterior to eye wide, flat, approximately 1.5 times as wide as long; ocular canthus moderately long and broad (1/3 of ocular diameter), densely and finely punctate, with one short terminal seta. Frons with coarse, dense punctures and a few erect setae beside eyes. Eyes moderately large, ratio diameter/ interocular width: 0.59. Antenna with nine antennomeres; antennomeres three to five longer than wide, antennomeres six transverse, club with three antennomeres, twice as long as the remaining antennomeres combined and weakly reflexed externally. Mentum elevated and slightly flattened anteriorly. Labrum transverse, short, not produced medially, without median sinuation.

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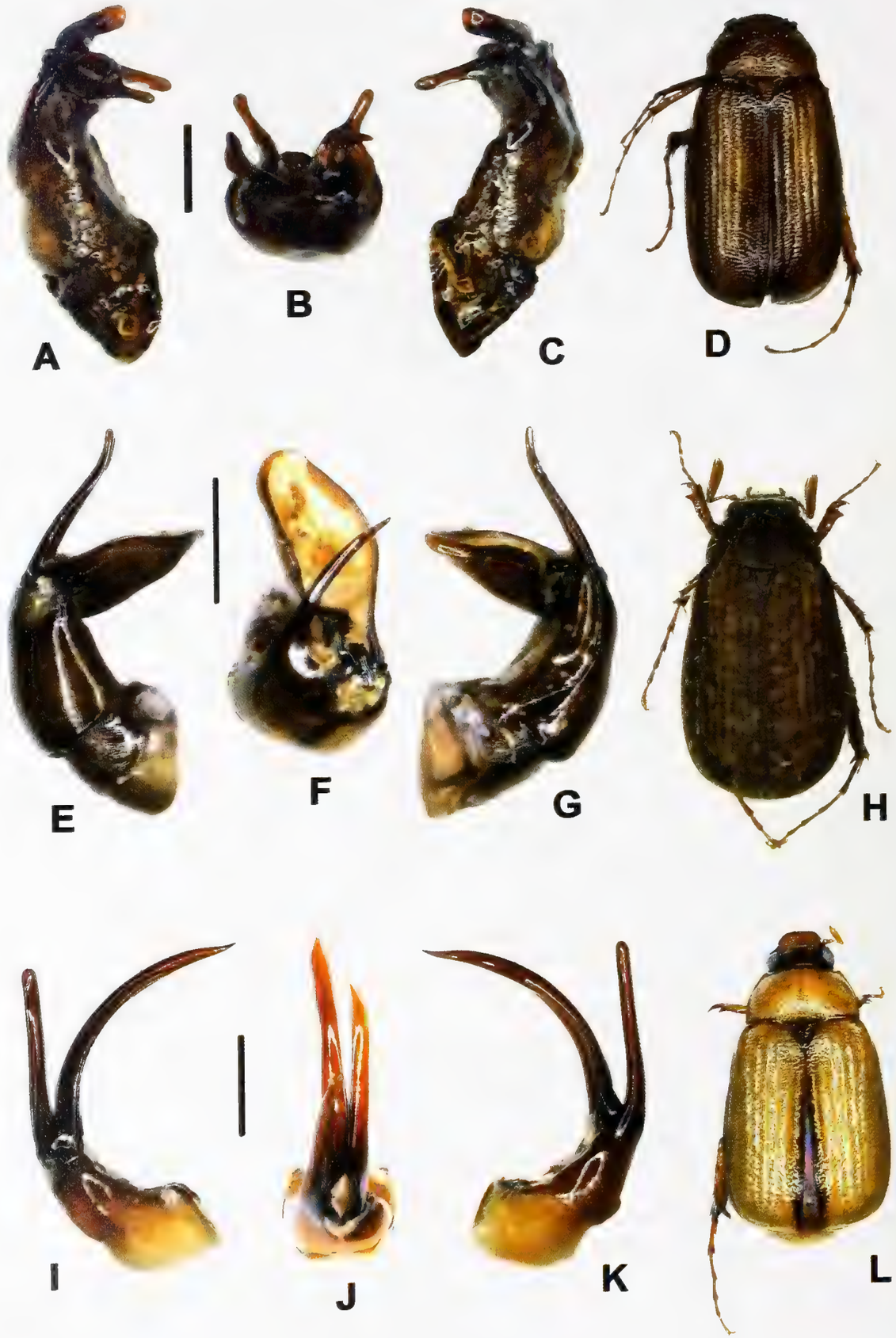

Fig. 4. **A–D.** *Sericania khandbariensis* sp. n. (holotype); **E–H.** *Gynaecoserica victori* (holotype); **I–L.** *G. aniniensis* sp. n. (holotype); **A, E, I.** Aedeagus, left side lateral view; **C, G, K.** Aedeagus, right side lateral view; **B, F, J.** parameres, dorsal view; **D, H, L.** Habitus. Scale: 0.5 mm. Habitus not to scale.

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Pronotum narrow, only little wider than long, widest at base, lateral margins virtually subparallel in basal half, slightly concavely sinuate between middle and basis, sides convex at middle, straight and strongly convergent in anterior half, anterior angles moderately produced and acute, posterior angles blunt and not rounded in the tip; anterior margin with a fine marginal line, convexly moderately produced medially; surface very densely and coarsely punctate, punctures fuse partly with each other on disc, glabrous; lateral border sparsely setose; hypomeron basally produced and distinctly carinate. Scutellum shiny, slender and long, triangular, with coarse, dense punctures, glabrous.

Elytra oblong, widest at middle, striae distinctly impressed, finely and densely punctate, intervals moderately convex, with fine, dense punctures concentrated along striae, glabrous, only with very minute setae in the punctures, beside the Scutellum and on lateral intervals with a few single, long, erect setae; epipleural edge fine, ending at strongly curved external apical angle of elytra, epipleura sparsely setose, apical border with fine fringe of microtrichomes (100x).

Ventral surface shiny, coarsely and very densely punctate, almost glabrous, metacoxa without setae laterally, only a few long setae on disc of metasternum; abdominal sternites finely and densely punctuate, with a transverse row of coarse punctures, each bearing a short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.42. Pygidium strongly convex and shiny, coarsely and not densely punctate, without smooth midline, glabrous, only along the apical margin with long setae.

Legs slender; femora with two longitudinal rows of setae, finely and sparsely punctate between the rows; metafemur shiny, anterior margin acute, without a continuously serrated line behind anterior edge, posterior margin ventrally smooth and not widened, completely serrated dorsally, in basal half with a few long setae which are one third as long as width of metafemur. Metatibia slender and not very long, widest at apex, ratio of width/ length: 1/ 3.5, dorsally longitudinally convex, with two groups of spines, basal one at the first quarter, apical group at two thirds of metatibial length; externally longitudinally convex, finely and moderately densely punctate, without wrinkles; ventral edge very finely serrated, with three robust setae of which two apical ones are more widely separated; medial face with a few fine, longitudinally impressed punctures, glabrous, apex interiorly near tarsal articulation sharply and deeply truncate. Tarsomeres dorsally finely and densely punctate, neither laterally nor dorsally carinate, ventrally with sparse, short setae; metatarsomeres ventrally with a strongly serrated ridge and beside it with an additional fine carina, first metatarsomere slightly longer than the following tarsomere and almost twice as long as the upper tibial spur. Protibia moderately long, bidentate; anterior claws symmetrical, basal tooth of inner claw truncate at apex.

Aedeagus: Fig. 4A–C. Habitus: Fig. 4D.

Diagnosis. *Sericania khandbariensis* sp. n. is very similar to *Sericania bhojpurensis* Ahrens, 2004 in external and genital morphology. The new taxon differs significantly only in the shape of the parameres: the left paramere has (in lateral view) a strongly developed median tooth that is directed externally.

Variation. Length: 6.4–6.5 mm, length of elytra: 4.5–4.9 mm, width: 3.2–3.5 mm. Antennal club of female as long as the remaining antennomeres combined.

Etymology. The species name is derived from name of the district of the type locality.

***Gynaecoserica victori* sp. n.** (Fig. 4E–H)

Type material examined. Holotype: ♂ "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279m, leg. V. Siniaev" (ZFMK).

Description. Length: 5.8 mm, length of elytra: 4.4 mm, width: 3.2 mm. Body oblong, dorsal surface brown with the margins of pronotum lighter and numerous yellowish dots on elytra, antenna and legs yellowish brown, dorsal surface dull, sparsely setose.

Labroclypeus subrectangular, widest at base, lateral margins subparallel in basal third, anteriorly strongly rounded and convergent towards the strongly rounded anterior angles, lateral border and ocular canthus producing a distinct blunt angle, margins moderately reflexed, anterior margin shallowly sinuate medially; surface slightly convex medially and shiny, finely and densely punctate, distance between punctures less than their diameter, with a numerous coarser punctures each bearing a long, erect seta; frontoclypeal suture distinctly incised and slightly elevated, strongly curved; smooth area in front of eye approximately as wide as long, strongly convex; ocular canthus moderately long and slender (1/3 of ocular diameter), finely and densely punctate, with a short terminal seta. Frons anteriorly shiny, in posterior quarter dull; on anterior shiny portion with coarse and dense punctures, behind frontoclypeal suture and beside eyes with a few erect setae, on posterior quarter punctures finer and sparser. Eyes small, ratio of diameter/ interocular width: 0.53. Antenna yellow, with ten antennomeres; club with four antennomeres, 1.5 times as long as the remaining antennomeres combined. Mentum weakly elevated and flattened anteriorly.

Pronotum widest at base, lateral margins straight and subparallel in basal half, in anterior half weakly curved

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and stronger convergent anteriorly, anterior angles distinctly produced and sharp, posterior angles blunt and distinctly rounded at the tip, anterior margin convexly produced medially, with a fine marginal line, basal margin without marginal line; surface with moderately dense and fine punctures, with sparse long setae, otherwise puncture with very minute seta only; anterior and lateral borders densely setose; hypomeron distinctly margined at base but not ventrally produced. Scutellum long and narrow, triangular, with fine and dense punctures, medially widely smooth, with a few long setae.

Elytra oblong, widest at middle, with a large, round, dark spot before apex, striae finely impressed and finely densely punctate, intervals weakly convex, with fine, sparsely scattered punctures concentrated along the striae, punctures with microscopic setae, odd intervals with a few single robust white setae; interior apical angle of elytra with a robust seta; epipleural edge fine, ending at the strongly curved external apical angle of elytra, epipleura densely setaceous, apical border without short microtrichomes.

Ventral surface dull, with fine and moderately dense punctures, sparsely setose, metacoxa only laterally with a few robust setae; each abdominal sternite with indistinct transverse row of coarse punctures bearing short setae between fine, dense punctation. Mesosternum between mesocoxae as wide as mesofemur, with irregularly scattered very strong setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.34. Pygidium strongly convex at apex, densely coarsely punctate, with a narrow impunctate line along the middle, with numerous irregularly scattered, long setae, otherwise with only very minute setae in each puncture.

Legs slender and moderately long; femora dull, with two longitudinal rows of setae, finely and sparsely punctate; metafemur moderately shiny, sharply margined anteriorly and without a submarginal serrate line, posterior margin weakly convex and glabrous, its ventrally only weakly widened in apical half and not serrate, dorsally very finely serrate, with a few long setae. Metatibia slender and moderately long, subequal in width behind anterior third, ratio width/ length: 1/ 3.3, dorsally finely carinate, with two groups of spines, basal one at one third, apical one at two thirds of metatibial length, basally with a few single, fine spines in the punctures; external face longitudinally convex, with sparse, fine punctures, glabrous; ventrally sharply carinate and finely serrate, with four strong equally distant spines; medially sparsely punctate, apex interiorly near tarsal articulation sharply and deeply truncate. Tarsomeres dorsally glabrous, with a few fine superficial punctures, ventrally with sparse, short setae; metatarsomeres ventrally with a strongly serrate ridge, beside it with a fine longitudinal carina, first metatarsomere as long as the following two tarsomeres combined and twice as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws asymmetrical, basal tooth of internal claw bluntly truncated.

Aedeagus: Fig. 4E–G. Habitus: Fig. 4H.

Female unknown.

Diagnosis. *Gynaecoserica victori* sp. n. is in habitus and shape of aedeagus very similar to *G. variipennis*. It may be differentiated from the latter by having the parameres narrower and the lateral apical apophysis of phallobasis almost straight and more slender.

Etymology. Named in honour of the collector of this new species, Victor Siniaev.

***Gynaecoserica aniniensis* sp. n.** (Fig. 4I–L)

Type material examined. Holotype: ♂ "834621 India: Arunachal Pradesh, Anini vicinity, 1700+-100m, 28°54"N, 95°56"E, L. Dembicky leg., 30–31.v.2007 Gynaecoserica spn2007_Arun1" (ZFMK).

Description. Length: 6.0 mm, length of elytra: 3.9 mm, width: 3.1 mm. Body oblong oval, entirely yellowish, behind eyes and along the basal margin of pronotum and lateral margins of elytra darker; dorsal surface shiny and sparsely setose.

Labroclypeus widest at base, lateral margins very strongly curved and convergent to strongly rounded anterior angles, lateral border and ocular canthus producing a distinct blunt angle, margins weakly reflexed, anterior margin medially feebly sinuate; surface medially weakly convex, finely and very densely punctate, distance between punctures less than their diameter, with a few coarse punctures immediately behind anterior margin bearing short fine setae; frontoclypeal suture very indistinctly incised and medially weakly curved; smooth area in front of eye approximately 1.5 times as wide as long; ocular canthus short and slender, sparsely punctate, with a fine terminal seta. Frons shiny, with fine, sparse punctures, with a few single setae beside the eyes. Eyes moderately large, ratio of diameter/ interocular width: 0.64. Antenna yellow, with ten antennomeres; club with four antennomeres, club slightly shorter the remaining antennomeres combined, sixth antennomere not transversely produced. Mentum weakly elevated and flattened anteriorly.

Pronotum moderately wide, widest at base, lateral margins in basal half straight and an subparallel, in anterior half moderately curved and convergent anteriorly towards the strongly produced and sharp anterior angles, posterior angles blunt, anterior margin almost not produced medially, with a broad smooth marginal line, basal margin without marginal line; surface with dense and coarse punctures, without microscopic setae in punctures; anterior and

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lateral borders sparsely setaceous; hypomeron distinctly margined at base but not ventrally produced. Scutellum narrowly triangular, with fine, dense punctures, at base smooth medially, microscopic setae not present in the punctures.

Elytra moderately long and oval, widest at middle, striae strongly impressed, coarsely and densely punctate, intervals convex, with coarse and moderately dense punctures concentrated along the striae, punctures without fine microscopic setae, odd intervals with single coarse punctures each bearing a white erect seta; interior apical angle of elytra with a strong seta; epipleural edge fine ending at the strongly curved external apical angle of elytra, epipleura densely setaceous, apical border without short microtrichomes.

Ventral surface dull, with fine and moderately dense punctures, almost glabrous, metacoxa only laterally with a few strong adjacent setae; each abdominal sternite with indistinct transverse row of coarse punctures bearing short setae between fine, dense punctation, last sternite 1.5 times as long as the penultimate one. Mesosternum between mesocoxae as wide as mesofemur, with irregularly scattered very strong setae. Ratio of length of metepisternum/ metacoxa: 1/ 1.3. Pygidium strongly convex, shiny, coarsely and densely punctate, without smooth midline, along the apical margin with moderately dense robust light setae mixed with shorter fine ones.

Legs robust and moderately long; femora dull, with two longitudinal rows of setae, finely and sparsely punctate; metafemur shiny, sharply margined anteriorly and without a submarginal serrate line, posterior margin weakly convex and glabrous, ventrally only weakly widened in apical half and not serrate, dorsally finely serrate, with short setae. Metatibia slender and moderately long, widest at apex, ratio width/ length: 1/ 4.0, dorsally in apical half sharply edged, with two groups of spines, basal one at one third, apical one at two thirds of metatibial length, basally with a few single, fine spines in the punctures; external face longitudinally convex, with moderately dense and coarse punctures, glabrous; ventrally sharply margined and serrate, with three strong, not equally distant spines, internal face very sparsely punctate, apex interiorly near tarsal articulation sharply and deeply truncate. Tarsomeres dorsally glabrous and impunctate, ventrally with sparse, short setae; metatarsomeres ventrally with a strongly serrate ridge, beside which is a fine longitudinal carina, first metatarsomere as long as the following two tarsomeres combined and slightly less than twice as long as the upper tibial spur. Protibia moderately long, bidentate, protarsal claws symmetrical.

Aedeagus: Fig. 4I–K. Habitus: Fig. 4L.

Diagnosis. *Gynaecoserica aniniensis* sp. n. is externally similar to the species of *Leuroserica* as well as to *G. compacta* Ahrens & Fabrizi, 2009 and *G. barclayi* Ahrens & Fabrizi, 2009 by the habitus and the shiny dorsal surface. On the base of this latter character it may be differentiated from all other known dull *Gynaecoserica* species. The new species differs significantly in the shape of aedeagus from the above mentioned taxa, mainly by the very elongated parameres being not fused mesoventrally, and the very long lateral apophysis at the right apex of the phallobasis. The large flattened lateral process of the on the left side preapical phallobase common to all *Leuroserica* species is absent.

Remarks. The holotypes of the new species was sequenced for the Cytochrome oxidase Subunit 1 gene, the sequences will be deposited on Genbank with reference to its extraction number (834621).

Etymology. Name derived from its type locality, Anini (Arunachal Pradesh, India).

***Lasioserica hamifer* sp. n.** (Fig. 5A–D)

Type material examined. Holotype: ♂ "Bhutan: Dung Dung Nyelsa, 27°32'N, 90°11'E 1–3.vii.2009, 2970m, leg. V. Siniaev" (ZFMK). Paratype: 1 ♀ same data as holotype (ZFMK).

Description. Length: 5.9 mm, length of elytra: 3.9 mm, width: 3.2 mm. Body oblong, dark brown, antenna yellowish brown, dorsal surface dull, labroclypeus and anterior frons shiny, densely covered with small white setae.

Labroclypeus subtrapezoidal, widest at base, lateral margins moderately curved and strongly convergent toward moderately rounded anterior angles, margins moderately reflexed, anterior margin moderately sinuate medially; surface flat and shiny, finely and densely punctate, with a few long, erect setae behind the anterior margin; frontoclypeal suture slightly elevate and weakly curved; smooth area in front of eye three times as wide as long; ocular canthus moderately long and slender (ca. 1/3 of ocular diameter), smooth, with a short single terminal seta. Frons shiny on anterior half, posterior half dull, with fine, dense punctures and with minute setae in punctures, beside the eyes and on posterior third with numerous longer setae that are bent backwards. Eyes large, ratio of diameter/ interocular width: 0.83. Antenna yellow, with ten antennomeres; club with four antennomeres subequal in length, club little longer than the remaining antennomeres combined. Mentum elevated and flattened anteriorly.

Pronotum moderately transverse, widest at base, lateral margins weakly convex and slightly convergent anteriorly, in anterior quarter strongly curved and convergent anteriorly, behind anterior angles convex, anterior angles moderately produced and moderately acute, posterior an-

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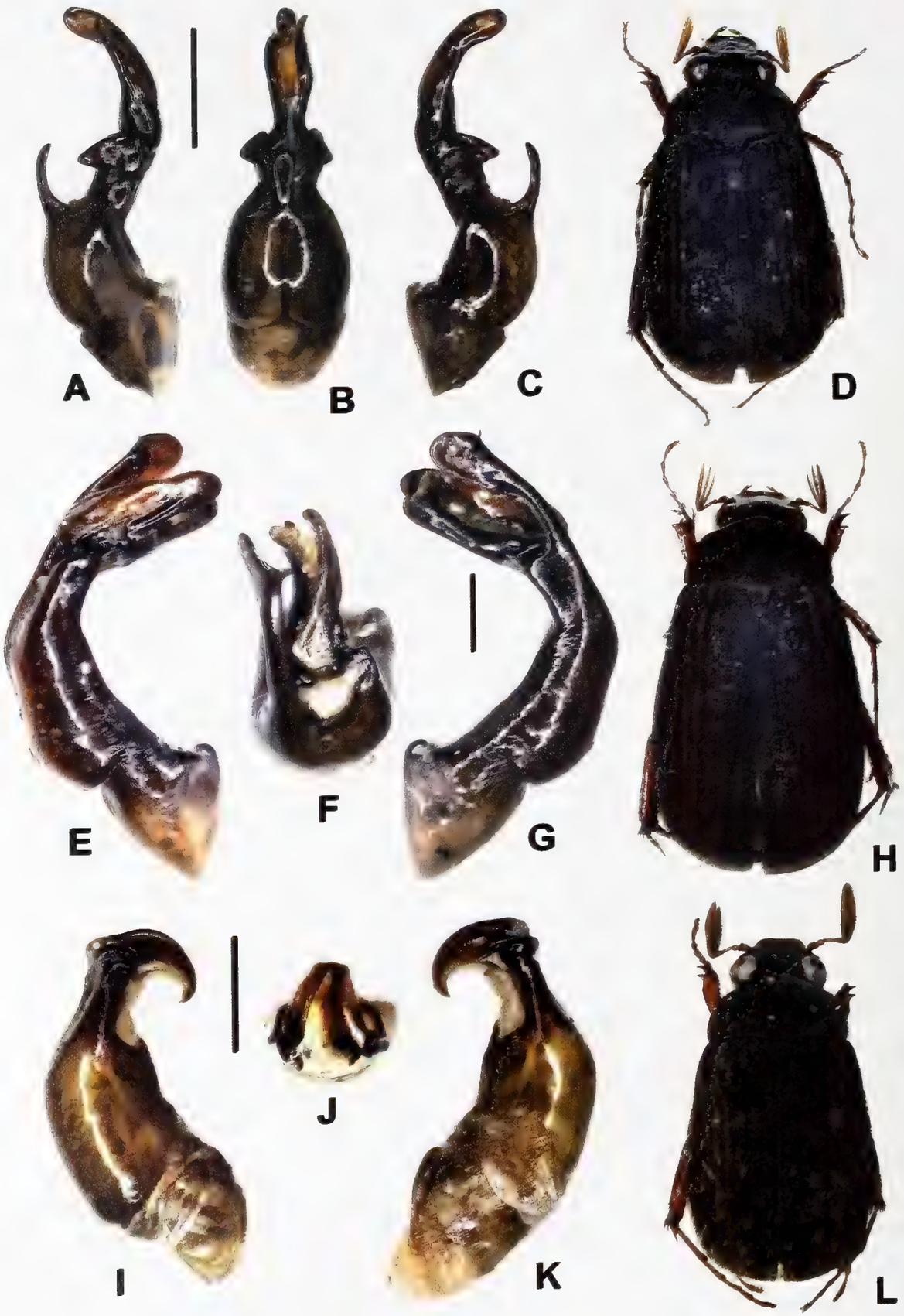

Fig. 5. **A–D.** *Lasioserica hamifer* sp. n. (holotype); **E–H.** *L.* (s. l.) *imminuta* sp. n. (holotype); **I–L.** *Amiserica michaeli* sp. n. (holotype); **A, E, I.** Aedeagus, left side lateral view; **C, G, K.** Aedeagus, right side lateral view; **B, F, J.** parameres, dorsal view; **D, H, L.** Habitus. Scale: 0.5 mm. Habitus not to scale.

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gles blunt, strongly rounded at the tip, anterior margin convexly produced medially, with a indistinct and fine marginal line, basal margin without marginal line; surface with dense and fine punctures, with moderately dense, fine white setae that are bent backwards, without smooth midline; anterior and lateral borders glabrous; hypomeron carinate but not produced ventrally. Scutellum long and narrow, apex weakly rounded, with fine, moderately dense punctures, with minute setae in the punctures.

Elytra moderately oblong, widest just behind middle, striae finely impressed and punctate, intervals weakly convex, with sparse, fine punctures in major part concentrated along the striae, with minute, white adjacent setae in the punctures, odd intervals with single some single, longer setae; apical border with a fine rim of short microtrichomes.

Ventral surface dull, with fine and moderately dense punctures, with sparse, short, adjacent setae; metacoxa glabrous, laterally with some fine setae; abdominal sternites finely and densely punctuate, with an indistinct transverse row of coarse punctures, each bearing a robust short seta, otherwise sternites glabrous, penultimate abdominal sternite with a convex transverse elevation in its posterior portion. Mesosternum between mesocoxae almost as wide as mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.35. Pygidium moderately convex, with fine, dense punctures bearing each a fine seta, without a smooth midline, on posterior half with longer setae being twice as long as the short ones.

Legs moderately slender; femora finely densely punctate and glabrous, with two longitudinal rows of setae; anterior edge of metafemur acute, with an adjacent continuously serrated line, posterior margin ventrally weakly widened in apical half but not serrate, dorsally completely and finely serrate. Metatibia slender and short, widest at apex, ratio width/ length: 1/ 3.1, distinctly carinate dorsally, with one group of spines only at 7/8 of metatibial length, basally with a few single spines in punctures, beside dorsal margin with a continuously serrated line convergent with dorsal margin behind apical group of spines, between serrated line and dorsal margin finely punctate and with a few minute setae; lateral face longitudinally convex, with dense and fine punctures, along the middle narrowly smooth; ventral edge serrated, with four fine and long, equidistant spines, medial face finely and sparsely punctate and punctures with minute setae, apex interiorly near tarsal articulation weakly concavely truncate. Tarsomeres dorsally sparsely punctate and finely setose, ventrally with short, sparse setae; metatarsomeres ventrally with a strongly serrated ridge, laterally not carinate, first metatarsomere as long as the following two tarsomeres combined and one third of its length longer than the dorsal tibial spur. Protibia short, bidentate, protarsal claws symmetrical, basal tooth of inner claw pointed.

Aedeagus: Fig. 5A–C. Habitus: Fig. 5D.

Diagnosis. *Lasioserica hamifer* sp. n. is in body shape, colour and pilosity quite similar to *L. nenya* Ahrens, 1996, however, genital morphology is divergent from all other so far known *Lasioserica* species. The processes of lateral apical phallobasis are symmetrical and the parameres are almost of the same length, the dorsal apophysis on apical phallobasis is short and evenly narrowed.

Variation. Length: 5.9 mm, length of elytra: 3.9 mm, width: 3.2 mm. Antennal club of female composed of three antennomeres, slightly shorter than the remaining antennomeres combined.

Etymology. The name is derived from Latin, *hamifer* – bearing a hook.

***Lasioserica* (s. l.) *imminuta* sp. n.** (Fig. 5E–H)

Type material examined. Holotype: ♂ "Bhutan: Bumthang, 27°31'N, 90°33'E 7–9.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

Description. Length: 10.3 mm, length of elytra: 7.3 mm, width: 5.5 mm. Body oblong, dark brown, legs, margins of pronotum and striae of elytra reddish brown, antenna yellowish brown, dorsal surface dull, almost glabrous, labroclypeus and anterior frons shiny.

Labroclypeus subtrapezoidal, widest at base, lateral margins moderately curved and strongly convergent toward weakly rounded anterior angles, margins moderately reflexed, anterior margin moderately sinuate medially; surface flat and shiny, finely and very densely punctate, with a few coarse punctures behind the anterior margin bearing each a long, erect seta; frontoclypeal suture finely incised but not elevate, weakly curved; smooth area in front of eye three times as wide as long, flat; ocular canthus short and wide (ca. 1/4 of ocular diameter), superficially and finely punctate, with a short single terminal seta. Frons shiny on anterior third, posteriorly dull, with fine, dense punctures and with minute setae in punctures, beside the eyes and on posterior third with a few longer erect setae. Eyes moderately large, ratio of diameter/ interocular width: 0.76. Antenna yellow, with ten antennomeres; club with four antennomeres with the seventh antennomere slightly shorter than the club, club little 1.5 times as long as the remaining antennomeres combined. Mentum elevated and flattened anteriorly.

Pronotum moderately transverse, widest at base, lateral margins evenly moderately convex and convergent anteriorly, anterior angles moderately produced and moderately acute, posterior strongly rounded, anterior margin convexly produced medially, with a indistinct and fine marginal line that is medially interrupted, basal margin without marginal line; surface with dense and fine punc-

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tures, with very minute setae in the punctures, otherwise glabrous, without smooth midline; anterior and lateral borders sparsely setose; hypomeron carinate but not produced ventrally. Scutellum long and narrow, apex weakly rounded, with moderately coarse, dense punctures, with minute setae in the punctures.

Elytra moderately oblong, widest in apical third, striae distinctly impressed and punctate, intervals weakly convex, with dense, fine punctures concentrated along the striae, only with very minute setae in the punctures, odd intervals with single some single, long, appressed setae; apical border with a fine rim of short microtrichomes.

Ventral surface dull, with fine and moderately dense punctures, with sparse, short, adjacent setae; metacoxa glabrous, laterally with some fine setae; abdominal sternites finely and densely punctuate, with an indistinct transverse row of coarse punctures, each bearing a robust short seta, otherwise sternites minutely setose, penultimate abdominal sternite flat. Mesosternum between mesocoxae almost as wide as mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.37. Pygidium moderately convex, with fine, dense punctures bearing each a minute seta, without a smooth midline, along the posterior margin with a few longer setae.

Legs moderately slender; femora finely densely punctate and glabrous, with two longitudinal rows of setae; anterior edge of metafemur acute, with an adjacent continuously serrated line, posterior margin ventrally weakly widened in apical half and finely serrate at apex, dorsally completely and finely serrate. Metatibia slender and short, widest at apex, ratio width/ length: 1/ 3.1, sharply carinate dorsally, with one group of spines only at 4/5 of metatibial length, basally with a few single spines in punctures, beside dorsal margin with a almost continuously serrated line convergent with the dorsal margin behind apical group of spines, line shortly interrupted shortly behind the middle, between serrated line and dorsal margin sparsely finely punctate and with a few minute setae; lateral face longitudinally convex, with dense and moderately coarse punctures; ventral edge serrated, with four fine and long, equidistant spines, medial face finely and moderately densely punctate, punctures with minute setae, apex interiorly near tarsal articulation moderately concavely truncate. Tarsomeres dorsally smooth and glabrous, ventrally with short, sparse setae; metatarsomeres ventrally with a strongly serrated ridge, laterally not carinate, first metatarsomere distinctly shorter than the following two tarsomeres combined and one third of its length longer than the dorsal tibial spur. Protibia short, bidentate, protarsal claws symmetrical, basal tooth of inner claw simply pointed.

Aedeagus: Fig. 5E–G. Habitus: Fig. 5H.

Diagnosis. *Lasioserica imminuta* sp. n. is very similar to *L. pacholatkoi* Ahrens, 2000 in external appearance and shape of male genitalia. Both share the right lateral apophysis of phallobase. *L. imminuta* sp. n. may be differentiated from *L. pacholatkoi* by the much less extended median basal lobe of left paramere, the right paramere being less curved (lateral view), the lateral apical apophysis of phallobasis being ventrally strongly sinuated at base and with a small apical tooth being medially weakly produced, and the lacking slightly pronounced pair of tubercles on apical phallobasis (see Ahrens, 2000: 28, Fig. 26).

Etymology. The name is derived from Latin, *imminutus*, reduced (with reference to the narrower parameres and lateral apophysis of aedeagus, compared to *L. pacholatkoi*).

Amiserica michaeli sp. n. (Fig. 5I–L)

Type material examined. Holotype: ♂ "Myanmar (Burma) Chin State/ Chin Hills Umg. Kanpetlet Natmatoung N.P. (NF) 23.VI.2008 leg. Michael Langer/ E093°57' N21°13' H= ca. 1500 m" (ZFMK). Paratypes: 14 ♂♂, 4 ♀♀ same data as holotype (CML, ZFMK), 6 ♂♂ "Myanmar (Burma) Chin State; Chin Hills 20 miles camp (Horn Bird station) 27.–30.VI.2008 leg. M. Langer/ N21°25'15.2" E093°47'21.5" H=2350 m (NF)" (CML, ZFMK).

Description. Length: 5.2 mm, length of elytra: 3.6 mm, width: 2.8 mm. Body oblong, dark brown, antenna and legs as well stains on elytra yellowish brown, dorsal surface dull, head shiny, surface sparsely covered with short white setae.

Labroclypeus narrow compared to width of head, widest at base, lateral margins straight and convergent toward strongly rounded anterior angles, margins moderately reflexed, anterior margin weakly sinuate medially; surface flat and shiny, coarsely and densely punctate, with a few long, sparsely scattered, erect setae; frontoclypeal suture slightly elevate and weakly curved; smooth area in front of eye three times as wide as long, weakly convex; ocular canthus moderately long and slender (ca. 1/3 of ocular diameter), smooth, with a short single terminal seta. Frons shiny, posterior quarter dull, with fine, dense punctures, beside the eyes and on posterior third with a few longer setae. Eyes very large, ratio of diameter/ interocular width: 0.92. Antenna yellow, with nine antennomeres; club with three antennomeres, club 1.5 times as long as the remaining antennomeres combined. Mentum elevated and flattened anteriorly.

Pronotum moderately transverse, widest before base, lateral margins weakly but evenly convex and convergent an-

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teriorly, behind anterior angles convex and slightly narrowed at base, anterior angles moderately produced and blunt, posterior angles blunt, moderately rounded at the tip, anterior margin convexly produced medially, with a fine marginal line, basal margin without marginal line; surface with dense and fine punctures, with fine white appressed setae in the punctures, without smooth midline; anterior and lateral borders sparsely setose; hypomeron carinate but not produced ventrally. Scutellum long and narrow, apex weakly rounded, with fine, dense punctures, with minute setae in the punctures.

Elytra moderately oblong, widest shortly behind middle, striae weakly impressed and finely punctate, intervals flat, with sparse, fine punctures concentrated along the striae, dark brown spots impunctate, with minute, white adjacent setae in the punctures, odd intervals as well the second one with single some single, longer setae being in part appressed in part bent backwards; apical border with a very fine rim of short microtrichomes.

Ventral surface dull, with fine and moderately dense punctures, with sparse, short, adjacent setae; metacoxa glabrous, laterally with some fine setae; abdominal sternites finely and densely punctuate, with an indistinct transverse row of coarse punctures, each bearing a robust short seta, otherwise sternites glabrous, penultimate abdominal sternite with a transversely elevated in its posterior portion with the elevation medially slightly impressed. Mesosternum between mesocoxae almost as wide as mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.38. Pygidium weakly convex, with fine, dense punctures bearing each a fine, short seta, without a smooth midline, along posterior margin with longer setae being twice as long as the short ones.

Legs moderately slender; femora finely densely punctate and glabrous, with two longitudinal rows of setae; anterior edge of metafemur acute, with an adjacent continuously serrated line, posterior margin ventrally weakly widened in apical half but not serrate, dorsally completely and finely serrate. Metatibia slender and short, widest at apex, ratio width/ length: 1/ 3.5, sharply carinate dorsally, with one group of spines only at 4/5 of metatibial length, basally with a few single spines in punctures, beside dorsal margin with a continuously serrated line convergent with dorsal margin behind apical group of spines, between serrated line and dorsal margin impunctate; lateral face longitudinally convex, with dense and coarse punctures, with short setae in the punctures; ventral edge serrated, with two robust and long, widely spaced spines; medial face finely and sparsely punctate and glabrous, apex interiorly near tarsal articulation weakly concavely truncate. Tarsomeres dorsally smooth, ventrally with short, sparse setae; meso- and metatarsomeres dorsally sparsely punctate and finely setose, metatarsomeres ventrally with a strongly serrated ridge, laterally not carinate, first metatarsomere as long as the following two tarsomeres combined and more than twice as long as the dorsal tibial spur. Protibia short, bidentate, medially bluntly widened at middle of the external margin; protarsal claws symmetrical, basal tooth of inner claw simply pointed.

Aedeagus: Fig. 5I–K. Habitus: Fig. 5L.

Diagnosis. *Amiserica michaeli* sp. n. is similar to *A. insperata* (Brenske, 1898) in external appearance and shape of male genitalia. *A. michaeli* sp. n. may be differentiated from *A. insperata* by the less dense dorsal pilosity, the abruptly narrowed ventral apical incision of ventral phallobasis, and the strongly curved apex of parameres (lateral view).

Variation. Length: 4.8–5.8 mm, length of elytra: 3.4–4.0 mm, width: 2.7–3.1 mm. Female with an antennal club as long as the remaining antennomeres combined and the eyes distinctly smaller than in male (ratio of diameter/ interocular width: 0.64).

Etymology. The species is dedicated to its collector, Michael Langer.

Neoserica (s. l.) *kachinensis* sp. n. (Fig. 6A–D)

Type material examined. Holotype: ♂ "Myanmar (Burma) Provinz Kanchin State, Paßstraße zum Mt. Emaw Bum, 26–27.05.2006, 3008m, N26°10'31.9" E098°30'03.4" Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (ZFMK).

Description. Length: 10.0 mm, length of elytra: 7.2 mm, width: 5.4 mm. Body oblong, dark brown, legs reddish brown, antennal club yellowish brown, dorsal surface dull, labroclypeus and anterior half of frons shiny, dorsal surface nearly glabrous.

Labroclypeus subtrapezoidal, little wider than long, widest at base, lateral margins convex and moderately convergent anteriorly, anterior angles moderately rounded, anteriorly weakly sinuate medially, margins moderately reflexed; surface flat and shiny, coarsely and densely punctate, glabrous, with a few single setae behind anterior margin; frontoclypeal suture indistinctly incised, not elevated and weakly angled medially; smooth area anterior to eye wide, flat, approximately twice as wide as long; ocular canthus moderately long and broad (1/3 of ocular diameter), finely and sparsely punctate, with a terminal seta. Frons on posterior half dull, on anterior half with fine and moderately dense punctures, with a few single erect setae beside each eye. Eyes moderately large, ratio diameter/ interocular width: 0.7. Antenna with ten antennomeres, club with four antennomeres and straight, 1.5 times as long as the remaining antennomeres combined. Mentum elevated and slightly flattened anteriorly. Labrum

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Fig. 6. **A–D.** *Neoserica* (s. l.) *kachinensis* sp. n. (holotype); **E–H.** *N.* (s. l.) *loeffleri* sp. n. (holotype); **A, E.** Aedeagus, left side lateral view; **C, G.** Aedeagus, right side lateral view; **B, F.** parameres, dorsal view; **D, H.** Habitus. Scale: 0.5 mm. Habitus not to scale.

transverse, short, not produced medially, with weak median sinuation.

Pronotum moderately transverse, widest at base, lateral margins nearly straight and convergent anteriorly in basal half, moderately convex and strongly convergent anteriorly, anterior angles distinctly produced and slightly rounded at tip, posterior angles almost right-angled and moderately rounded at tip; anterior margin with a moderately broad and complete marginal line, convexly produced medially; surface moderately densely and finely punctate, punctures on sides with very minute setae; anterior and lateral border sparsely setose; hypomeron basally distinctly carinate. Scutellum slender and long, triangular, with fine, dense punctures, glabrous.

Elytra oblong, widest in posterior third, striae weakly impressed, finely and moderately densely punctate, intervals weakly convex, with sparse, fine punctures concentrated along striae, odd intervals with few fine single setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border with a fine fringe of microtrichomes (100x).

Ventral surface dull, finely and densely punctate, metasternum sparsely covered with short fine or only very minute setae, metacoxa glabrous, with a few single setae laterally; abdominal sternites finely and densely punctuate, covered with short fine pilosity, and with a transverse row of coarse punctures, each bearing a robust short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.51. Pygidium strongly convex and dull, coarsely and densely punctate, without smooth midline, with dense, erect setae.

Legs slender; femora with two longitudinal rows of setae, finely and sparsely punctate between the rows; metafemur moderately shiny, anterior margin acute, behind anterior edge without serrated line, posterior margin in apical half ventrally smooth and only weakly widened, posterior margin dorsally also smooth, on its basal portion

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with a numerous very long setae being nearly subequal to width of metafemur. Metatibia slender and moderately long, widest at apex, ratio of width/ length: 1/ 3.7, dorsally weakly longitudinally carinate, with two groups of spines, basal group just before the middle, apical group at three quarters of metatibial length, basally with a few short single setae on a weak square-edged carina; externally longitudinally convex, finely and sparsely punctate; ventral edge finely serrated, with four robust equidistant setae, medial face with a few sparse punctures, glabrous, apex interiorly near tarsal articulation deeply truncate. Tarsomeres ventrally with sparse, short setae, not carinate laterally nor dorsally, smooth; metatarsomeres with a strongly serrated ridge ventrally, smooth, first metatarsomere a little shorter than the two following tarsomeres combined and a third of its length longer than the upper tibial spur. Protibia moderately long, bidentate; anterior claws symmetrical, basal tooth of inner claw sharply truncate at apex.

Aedeagus: Fig. 6A–C. Habitus: Fig. 6D.

Female unknown.

Diagnosis. *Neoserica kanchingensis* sp. n. is very similar to *Neoserica lenangensis* Ahrens & Fabrizi, 2009 and *N. sladeni* Ahrens, 2004 in external and genital morphology. The new species differs principally in the shape of the parameres: they are much shorter than in both species, being somewhat hammer-like shaped and distally strongly widened.

Etymology. Named after its occurrence in Kanching state (Myanmar).

***Neoserica* (s. l.) *loeffleri* sp. n.** (Fig. 6E–H)

Type material examined. Holotype: ♂ "Myanmar (Burma) Provinz Kanchin State, Camp Wald, Straße von Kanphant zum Mt. Emaw Bum, 25.05.2006, 2400m, N26°09'38.8" E098°30'53.5', Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (ZFMK).

Description. Length: 9.0 mm, length of elytra: 6.4 mm, width: 4.6 mm. Body oblong, dark brown, legs reddish brown, antennal club yellowish brown, dorsal surface dull, labroclypeus and anterior half of frons shiny, dorsal surface nearly glabrous.

Labroclypeus narrowly subtrapezoidal, little wider than long, widest at base, lateral margins weakly convex and moderately convergent anteriorly, anterior angles strongly rounded, anteriorly weakly sinuate medially, margins moderately reflexed; surface flat and shiny, coarsely and densely punctate, glabrous, with a few single setae behind anterior margin; frontoclypeal suture distinctly incised and elevated, weakly angled medially; smooth area anterior to eye wide, moderately convex, approximately three times as wide as long; ocular canthus long and slender (1/3 of ocular diameter), glabrous and smooth, with a terminal seta. Frons on posterior half dull, on anterior half with fine and moderately dense punctures, with minute setae in the punctures and a few single erect setae beside each eye. Eyes large, ratio diameter/ interocular width: 0.84. Antenna with ten antennomeres, club with four antennomeres and weakly curved, 1.5 times as long as the remaining antennomeres combined. Mentum elevated and slightly flattened anteriorly. Labrum transverse, short, not produced medially, with weak median sinuation.

Pronotum narrow, widest at base, lateral margins nearly straight and convergent anteriorly in basal half, weakly convex and convergent anteriorly, anterior angles distinctly produced and acute, slightly concavely sinuate behind apex, posterior angles almost right-angled and moderately rounded at tip; anterior margin with a fine and complete marginal line, convexly produced medially; surface moderately densely and finely punctate, punctures with very minute setae; anterior and lateral border sparsely setose; hypomeron basally distinctly carinate. Scutellum slender and long, triangular, with fine, dense punctures, with a few very minute setae.

Elytra oblong, widest in posterior third, striae weakly impressed, finely and moderately densely punctate, intervals weakly convex, with sparse, fine punctures concentrated along striae, odd intervals with few fine single setae; epipleural edge fine, ending at moderately curved external apical angle of elytra, epipleura densely setose, apical border with a very fine fringe of microtrichomes (100x).

Ventral surface dull, finely and densely punctate, metasternum sparsely covered with short fine or only very minute setae, metacoxa glabrous, with a few single setae laterally; abdominal sternites finely and densely punctuate, covered with short fine pilosity, and with a transverse row of coarse punctures, each bearing a robust short seta. Mesosternum between mesocoxae half as wide as the slender mesofemur. Ratio of length of metepisternum/ metacoxa: 1/ 1.23. Pygidium moderately convex and dull, coarsely and densely punctate, without smooth midline, with minute setae in the punctures and sparse, erect setae.

Legs slender; femora with two longitudinal rows of setae, finely and sparsely punctate between the rows; metafemur moderately shiny, anterior margin acute, behind anterior edge without serrated line, posterior margin in apical half ventrally smooth and only weakly widened, posterior margin dorsally also smooth, on its basal portion with a numerous very long setae being nearly subequal to width of metafemur. Metatibia slender and moderately long, widest at apex, ratio of width/ length: 1/ 3.75, dorsally weakly longitudinally carinate, with two groups of

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spines, basal group just before the middle, apical group at three quarters of metatibial length, basally with a few short single setae on a weak square-edged carina; externally longitudinally convex, finely and moderately densely punctate; ventral edge finely serrated, with four robust equidistant setae, medial face with a few sparse punctures, glabrous, apex interiorly near tarsal articulation deeply truncate. Tarsomeres ventrally with sparse, short setae, not carinate laterally nor dorsally, smooth; metatarsomeres with a strongly serrated ridge ventrally, smooth, first metatarsomere a little shorter than the two following tarsomeres combined and twice as long as than the upper tibial spur. Protibia moderately long, bidentate; anterior claws symmetrical, basal tooth of inner claw sharply truncate at apex.

Aedeagus: Fig. 6E–G. Habitus: Fig. 6H.

Female unknown.

Diagnosis. *Neoserica loeffleri* sp. n. is similar to *Neoserica kanchingensis* sp. n. in external morphology. The new species differs principally in the shape of aedeagus: the dorsal apical apophysis is absent and the symmetrical parameres are longer than wide and almost evenly narrowed towards the apex (lateral view).

Etymology. Named after one of its collectors, S. Löffler.

4. NEW RECORDS

Serica (s. str.) *thibetana* (Brenske, 1897)

Material examined. 6 ex. "Myanmar (Burma) Provinz Kanchin State, Paßstraße zum Mt. Emaw Bum, 26–27.05.2006, 3008m, N26°10'31.9" E098°30'03.4" Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (CML), 7 ex. "Bhutan: Chile La-Pass, 27°22'N, 89°21'E 13–16.vii.2009, 3595m, leg. V. Siniaev" (ZFMK), 2 ex. "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279m, leg. V. Siniaev" (ZFMK), 6 ex. "Karnali P., Jumla D., Gothichaur valley, forest camp, 2850m NN, 06.VI.2007, 29°11'54"N, 82°18'36"E, leg. M. Hartmann, LF+HF" (NME).

Serica (s. str.) *rectidens* Ahrens & Fabrizi, 2009

Material examined. 4 ex. "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 17.vii.2009, 3279m leg. V. Siniaev" (ZFMK), 22 ex. "Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279m, leg. V. Siniaev" (ZFMK).

Serica (s. str.) *lepidula* Ahrens, 2005

Material examined. 4 ex. "Myanmar (Burma) Provinz Kanchin State, Mt. Emaw Bum nach Kanphant, 28.05.2006, N26°09'23.2" E098°31'16.4" Waldcamp Holzmeiler, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (CML), 3 ex. "Myanmar (Burma) Provinz Kanchin State, Camp Wald, Straße von Kanphant zum Mt. Emaw Bum, 25.05.2006, 2400m, N26°09'38.8" E098°30'53.5', Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (CML), 1 ex. "Myanmar (Burma) Chin State; Chin Hills 30 miles camp (Orchid station) 24.–27.VI.2008 leg. M. Langer" (CML).

Serica (s. str.) *nepalensis* (Frey, 1969)

Material examined. 1 ♂ "Loc. no. 34, Dolakha Deorali-Shivalaya 2705–1770m 12.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 3 ♀♀ "Loc. no. 33, Dolakha Deorali env. ca. 2700m 11.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Serica (s. str.) *eberti* (Frey, 1965)

Material examined. 1 ♂, 2 ♀♀ "Loc. no. 30, Sindhu-Pal. 30 km ESE of Khadichaur 27°40.93'N, 85°55.92'E 2595m, 8.05.2000/Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 1 ♂, 2 ♀♀ "Loc. no. 32, Dolakha Shivalaya-Deorali 1770–2705m 10.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 1 ♂ "Loc. no. 34, Dolakha Deorali-Shivalaya 2705–1770m 12.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 2 ♀♀ "Loc. no. 33, Dolakha Deorali env. ca. 2700m 11.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 3 ex. "Bhutan: Chile La-Pass, 27°22'N, 89°21'E 13–16.vii.2009, 3595m, leg. V. Siniaev" (ZFMK), 5 ex. " Bhutan: Pele La-Pass, 27°33'N, 90°12'E 17.vii.2009, 3279mleg. V. Siniaev" (ZFMK), 1 ex. (♀) " Bhutan: Bumthang, 27°31'N, 90°33'E 7–9.vii.2009, 2420m, leg. V. Siniaev" (ZFMK), 7 ex. " Bhutan: Pele La-Pass, 27°33'N, 90°12'E 29–30.vi.2009, 3279m, leg. V. Siniaev" (ZFMK), 1 ex. "Karnali P., Jumla D., Gothichaur valley, forest camp, 2850m NN, 06.VI.2007, 29°11'54"N, 82°18'36"E, leg. M. Hartmann, LF+HF" (NME).

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***Serica* (s. str.) *filitarsata* Ahrens, 1999**

Material examined. 4 ex. "Bhutan: Chile La-Pass, 27°22'N, 89°21'E 13–16.vii.2009, 3595m, leg. V. Siniaev" (ZFMK), 1 ex. Bhutan: "Bumthang, 27°31'N, 90°33'E 7–9.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

***Serica* (s. str.) *angustatotibialis* Ahrens, 1999**

Material examined. 1 ex. "Bhutan: Chile La-Pass, 27°22'N, 89°21'E 13–16.vii.2009, 3595m, leg. V. Siniaev" (ZFMK).

***Serica* (s. str.) *khaijiaris* Mittal, 1988**

Material examined. 1 ex. (♂) "Bhutan: Dung Dung Nyelsa, 27°32'N, 90°11'E 1–3.vii.2009, 2970m, leg. V. Siniaev" (ZFMK), 2 ex. (♀) " Bhutan: Pele La-Pass, 27°33'N, 90°12'E 17.vii.2009, 3279m leg. V. Siniaev" (ZFMK), 2 ex. (♀) "Bhutan: Trongsa, 8 km E Chenberi, 27°27'N, 90°23'E 4–6.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

***Serica* (s. str.) *khasiana* (Moser, 1918)**

Material examined. 2 ex. "Karnali P., Jumla D., Gothichaur valley, forest camp, 2850m NN, 06.VI.2007, 29°11'54"N, 82°18'36"E, leg. M. Hartmann, LF+HF" (NME).

***Serica sticta* Ahrens & Fabrizi, 2009**

Material examined. 1 ex. (♀) "Bhutan: Trongsa, 8 km E Chenberi, 27°27'N, 90°23'E 4–6.vii.2009, 2420m, leg. V. Siniaev" (CA).

***Serica karnaliensis* Ahrens, 1999**

Material examined. 4 ex. "Karnali P., Jumla D., Gothichaur valley, forest camp, 2850m NN, 06.VI.2007, 29°11'54"N, 82°18'36"E, leg. M. Hartmann, LF+HF" (NME).

***Pachyserica collaris* Ahrens, 2006**

Material examined. 6 ex. "Myanmar (Burma) Chin State; Chin Hills 20 miles camp (Horn Bird station) 27.–30.VI.2008 leg. M. Langer/ N21°25'15.2" E093°47'21.5" H=2350 m (NF)" (CML, ZFMK), 6 ex. (♀) "Myanmar (Burma) Chin State; Chin Hills 30 miles camp (Orchid station) 24.–27.VI.2008 leg. M. Langer/ N21°29'47.0" E093°47'21.9" H=2495 m (NF)" (CML, ZFMK), 2 ex. "Myanmar (Burma) Chin State: Chin Hills Avocado Plantage 30.VI.–01.VII.2008 leg. M. Langer/ N21°23'34.7" E093°52'29.4" H = 1914m (NF)" (CML).

***Pachyserica olafi* Ahrens, 2004**

Material examined. 1 ♂, 1 ♀ "Loc. no. 35, Dolakha Shivalaya-Jiri 1700–2220–1955m, 27°36.61'N, 86°17.55'E 12.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Gynaecoserica alma* Ahrens & Fabrizi, 2009**

Material examined. 4 ex. "Myanmar (Burma) Provinz Kanchin State, Camp Wald, Straße von Kanphant zum Mt. Emaw Bum, 25.05.2006, 2400m, N26°09'38.8" E098°30'53.5', Nachtfang, leg. M. Langer, S. Naumann & S. Löffler Coll. Michael Langer" (CA, CML), 2 ex. "Myanmar (Burma) Provinz Kanchin State, Mt. Emaw Bum nach Kanphant, 28.V.2006, leg. Michael Langer, Stefan Naumann & Swen Löffler Coll. M. Langer/ Nachtfang/ 2240 m N26°09'23.2" E098°31'16.4" " (CML).

***Lasioserica maculata* ssp. *jiriana* Ahrens, 1996**

Material examined. 1 ♂ "Loc. no. 34, Dolakha Deorali-Shivalaya 2705–1770m 12.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Lasioserica brevipilosa* Moser, 1919**

Material examined. 1 ex. "Myanmar (Burma) Provinz Kanchin State, ca. 20km N von Panwar, 23.V.2006, leg. Michael Langer, Stefan Naumann & Swen Löffler Coll. M. Langer/ Nachtfang/ 2180 m N25°43'30.2" E098°23'35.3" " (CML).

***Amiserica insperata* (Brenske, 1898)**

Material examined. 39 ex. "Myanmar (Burma) Chin State; Chin Hills 30 miles camp (Orchid station) 24.–27.VI.2008 leg. M. Langer/ N21°29'47.0" E093°47'21.9" H=2495 m (NF)" (CML, ZFMK), 1 ex. "Myanmar (Burma) Chin State: Chin Hills Avocado Plantage 30.VI.–01.VII.2008 leg. M. Langer/ N21°23'34.7"

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E093°52'29.4" H = 1914m (NF)" (ZFMK), 21 ex. "Myanmar (Burma) Chin State; Chin Hills 20 miles camp (Horn Bird station) 27.–30.VI.2008 leg. M. Langer/ N21°25'15.2" E093°47'21.5" H=2350 m (NF)" (CML, ZFMK), 1 ex (♂) "Myanmar (Burma) Chin State/ Chin Hills Umg. Kanpetlet Natmatoung N.P. (NF) 23.VI.2008 leg. Michael Langer/ E093°57' N21°13' H= ca. 1500 m" (CML).

Amiserica krausei **Ahrens, 2004**

Material examined. 1 ♂ "Loc. no. 7 Kaski Thulkharka Austrain camp, Lumle, 2140m, 22.04. 28°18.25'N, 83°49.74'E/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Amiserica costulata **(Frey, 1969)**

Material examined. 1 ♂ "Loc. no. 19, Rasuwa Langtang N.P. Dhunche 28°06.09'N, 85°18.73'E 1950m 30.04.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 1 ♂ "Loc. no. 33, Dolakha Deorali env. ca. 2700m 11.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 1 ♀ "Loc. no. 30, Sindhu-Pal. 30 km ESE of Khadichaur 27°40.93'N, 85°55.92'E 2595m, 8.05.2000/Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Neoserica **(s. l.)** *matura* **Ahrens, 2004**

Material examined. 1 ♂ "Loc. no. 36, Dolakha Jiri-Charikot 27°37.63'N, 86°05.38'E 13.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Maladera dierli **(Frey, 1969)**

Material examined. 1 ♂ "Loc. no. 34, Dolakha Deorali-Shivalaya 2705–1770m 12.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Maladera quinquidens **(Brenske, 1896)**

Material examined. 2 ♂♂ "Loc. no. 36, Dolakha Jiri-Charikot 27°37.63'N, 86°05.38'E 13.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Maladera prenai **Ahrens, 2004**

Material examined. 1 ex. "Bhutan: Dung Dung Nyelsa, 27°32'N, 90°11'E 1–3.vii.2009, 2970m, leg. V. Siniaev" (ZFMK), 1 ex. "Bhutan: Trongsa, 8 km E Chenberi, 27°27'N, 90°23'E 4–6.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

Maladera bagmatiensis **Ahrens, 2004**

Material examined. 2 ♀♀ "Loc. no. 36, Dolakha Jiri-Charikot 27°37.63'N, 86°05.38'E 13.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN),

Maladera simlana **(Brenske, 1898)**

Material examined. 1 ♀ "Loc. no. 35, Dolakha Shivalaya-Jiri 1700–2220–1955m, 27°36.61'N, 86°17.55'E 12.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Maladera himalaica **ssp.** *incola* **Ahrens, 2004**

Material examined. 1 ♂ "Loc. no. 35, Dolakha Shivalaya-Jiri 1700–2220–1955m, 27°36.61'N, 86°17.55'E 12.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

Maladera sprecherae **Ahrens, 2004**

Material examined. 22 ex. "Bhutan: Trongsa, 8 km E Chenberi, 27°27'N, 90°23'E 4–6.vii.2009, 2420m, leg. V. Siniaev" (ZFMK).

Maladera siwalikiana **Ahrens, 2004**

Material examined. 6 ex. "Nepal: Narayani Dist., Chitwan, Sauraha vill. 160m 27.35N 84.30E [GPS] env. 09.–17.VII.2009 NME Expedition (NME).

Oxyserica pygidialis annapurnae **(Ahrens, 1995)**

Material examined. 1 ♂ "Loc. no 20, Langtang N.P. Dhunche-ShinGompa 28°06.63'N, 85°20.47'E 1950–3250m, 1.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 467 ex. "Nepal: Manaslu Mts. NE slope, Bhudi Gandaki valley

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above Prok, 2950m, 28°30'42"N, 84°49'52"E, 27.5.2006 leg. J. Schmidt" (NME, ZFMK).

***Oxyserica bimaculata* (Hope, 1831)**

Material examined. 2 ♂♂, 7 ♀♀ "Loc. no. 35, Dolakha Shivalaya-Jiri 1700–2220–1955m, 27°36.61'N, 86°17.55'E 12.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 4 ♂♂, 1 ♀ "Loc. no. 32, Dolakha Shivalaya-Deorali 1770–2705m 10.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN), 1 ♂, 1 ♀ "Loc. no. 31, Dolakha Jiri-Shivalaya 1995–2220–1700m, 27°36.61'N, 86°17.55'E 09.5.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Microserica schulzei* Ahrens, 1998**

Material examined. 1 ♂, 3 ♀♀ "Loc no. 8 Kaski Phewa Tal Lake, Pokhara env. 23.04.2000 28°12.60'N, 83°57.70'E/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Microserica gandakiensis* Ahrens, 1998**

Material examined. 2 ♀♀ "Loc no. 7 Kaski Thulakharka Austrian camp, Lumle, 2140m 22.04.2000 28°18.25'N, 83°49.74'E/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Nepaloserica mustangia* Ahrens & Sabatinelli, 1996**

Material examined. 2 ♂♂, 1 ♀ "Nepal, Annapurna Mts., Chitre (Ghorapani to Tatopani), 1900–2300 m NN, 10.–12.IX.2003, leg. J. Schmidt" (CA). Paratypes: same data as holotype (CA).

***Nepaloserica helambuensis* Ahrens & Sabatinelli, 1996**

Material examined. 1 ♀ "Loc. no 20, Langtang N.P. Dhunche-ShinGompa 28°06.63'N, 85°20.47'E 1950–3250m, 1.05.2000/ Nepal Expedition A. Konstantinov, S. Lingafelter, M. Volkovitsch 2000" (ZIN).

***Nepaloserica schmidti* Ahrens & Sabatinelli, 1996**

Material examined. 17 ex. (♂, ♀) "Nepal Manaslu Mts. W-slope Dudh Khola vall., 3050–3250m 4.6.2006 leg. J. Schmidt" (ZFMK).

***Nepaloserica procera* spp. *rufescens* Frey, 1969**

Material examined. 116 ex. (♂, ♀) "Nepal Manaslu Mts. N-slope Larkya Bazar 3900–4100m 28°39'26"N, 84°37'09"E, 1.6.2006 leg. Schmidt" (ZFMK), 2 ex. (♂, ♀) "Nepal Manaslu Mts. SE-slope Gupchi Danda 2900–3000m 28°06'54"N, 84°47'00"E, 21.5.2006 leg. Schmidt" (ZFMK), 1 ex. (♂, ♀) "Nepal Manaslu Mts. SE-slope W Gupchi Danda 2200–2300m 28°08'37"N, 84°44'42"E, 18.5.2006 leg. Schmidt" (ZFMK).

***Nepaloserica jumlaica* Ahrens, 1999**

Material examined. 4 ex. "Karnali P., Jumla D., Gothichaur valley, forest camp, 2850m NN, 06.VI.2007, 29°11'54"N, 82°18'36"E, leg. M. Hartmann, LF+HF" (NME).

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A new species of the genus *Acontosceles* (Coleoptera: Limnichidae: Thaumastodinae) from Indonesia

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Abstract. A new species, *Acontosceles javanicus* sp. nov., is described from Java Island, Indonesia.

Key words. Limnichidae, *Acontosceles javanicus*, new species, taxonomy.

INTRODUCTION

Acontosceles Champion, 1924 is a unique limnichid beetle genus that has hypognathous head with large and distinctly dorsally placed eyes, and lives in riverine and hygropetric environment. Pütz (2008) revised the genus and recognized ten described and some new species from Japan, Taiwan, China, the Philippines, Laos, Thailand, Myanmar, Nepal, India, and Indonesia. From Indonesia, two undescribed species were recorded from Kalimantan and Sulawesi Islands (Pütz 2008).

In the present paper, we describe one new species from Java Island, Indonesia. This species is the first representative of the genus from the southern hemisphere.

MATERIALS AND METHODS

The holotype designated here is deposited in the collection of the Entomological Laboratory, Ehime University Museum, Matsuyama (EUMJ), and the paratypes are deposited in the collections of the EUMJ, the Naturhistorisches Museum, Wien (NMW), and the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK).

The abbreviations for measurements of external features used here are as follows: PL–length of pronotum; PW–width of pronotum; EL–length of elytra; EW–width of elytra; TL–total length (head to apex of elytra).

The species of this genus are well characterized by features of the male genitalia, particularly the shape and curvatures of the aedeagus. Therefore we used specific measurements of the aedeagus and detailed terminology for the purpose of morphometric comparison. The terms are as follows (see also Fig. 1): ML–maximum length, from base to apex; MH–maximum height, vertical line from ML line to MH point; BL–basal length, from base to the point where MH and ML lines meet; AL–apical length, ML minus BL; LL–length of lateral lobe, from line at base of parameres to vertical line connecting apex to line of maximum height; LBA–length of basal piece in apical portion, apex to point of MH minus LL; LBB–length of basal piece in basal portion, the line connected with base to MH point; C–degree of an angle at MH point, formed by LBB and LBC–LL lines crossing.

Acontosceles javanicus sp. nov. (Figs 2–16)

Type materials. Holotype (EUMJ): male, "Dondong river, Pengkol, Yogyakarta special Region, 7°53'8.63"S 110°36'0.37"E Java INDONESIA 3. III. 2010 H. Yoshitomi leg.". Paratypes (EUMJ, NMW, ZFMK): 1 male and 7 females, same data as for the holotype.

Description. Male. Body oblong, sides subparallel, slightly convex dorsally, strongly shagreened. Coloration of body almost black; basal antennomeres, maxillary palpi and legs yellowish-brown; antennomeres VIII–XI, apical part of femur, and tarsi black.

Head moderate in size, densely covered with yellowish-silver short setae, shallowly depressed in dorsum between eyes; frons, clypeus and labrum closely covered with erect, long silver setae. Eyes large, prominent dorso-laterally. Antennae moderate in length, reaching about proximal 1/2 of pronotum, closely covered with short setae throughout. Pronotum broadest at basal 1/3, depressed dorsally in antero-lateral parts, densely covered with yellowish short setae and minute scale-like setae, with obscure silver spots composed of minute scale-like setae on mesal part and along posterior margin; median part of posterior margin gently upturned; PW/PL 2.38–2.45 (2.41). Scutellum small, subtriangular, closely covered with short setae. Elytra oblong, subparallel-sided near base to apical 1/4, thence gently tapered apically, projecting ventrally in apical part;

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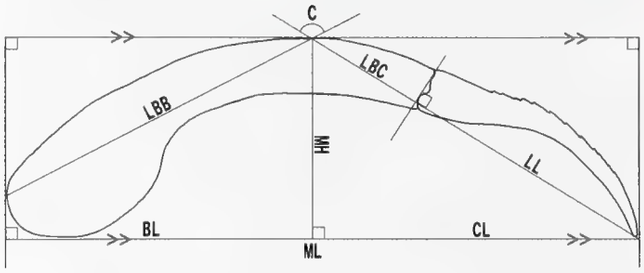
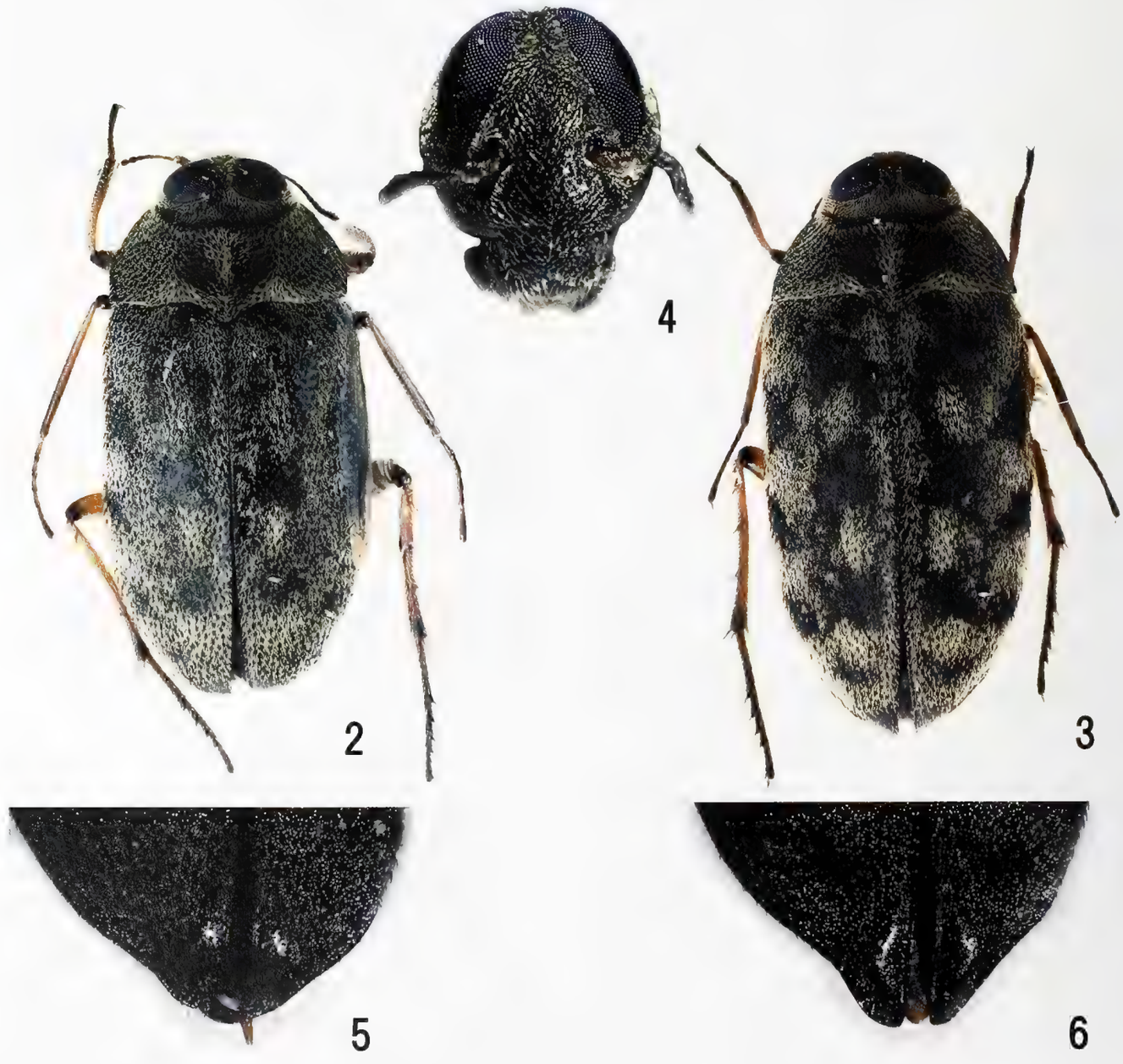


Fig. 1. Aedeagus in left aspect, showing the morphometric measurements. For abbreviations see text.

dorsal surface densely covered with yellowish short setae and minute scale-like setae, with about 10 obscure and small silver spots composed of minute scale-like setae; EL/EW 1.55–1.57 (1.56); EL/PL 4.08–4.13 (4.10); EW/PW 1.07–1.11 (1.09); TL/EW 2.10–2.29 (2.19). Prosternum between procoxae densely covered with long silver setae.

Sternite VII broad, gently arcuate in caudal margin, shallowly concave in near apical part, closely covered with short setae, bearing about 40 long setae in mesal part. Sternite VIII moderately sclerotized, U-shaped, closely covered with fine furrows in apical part, projecting laterally



Figs 2–6. *Acontosceles javanicus* sp. nov. **2–3**. habitus in dorsal views; **2**. male, holotype; **3**. female, paratype; **4**. head in anterior view, female, paratype; **5–6**. apices of elytra in dorso-posterior view; **5**. male, holotype; **6**. female, paratype.

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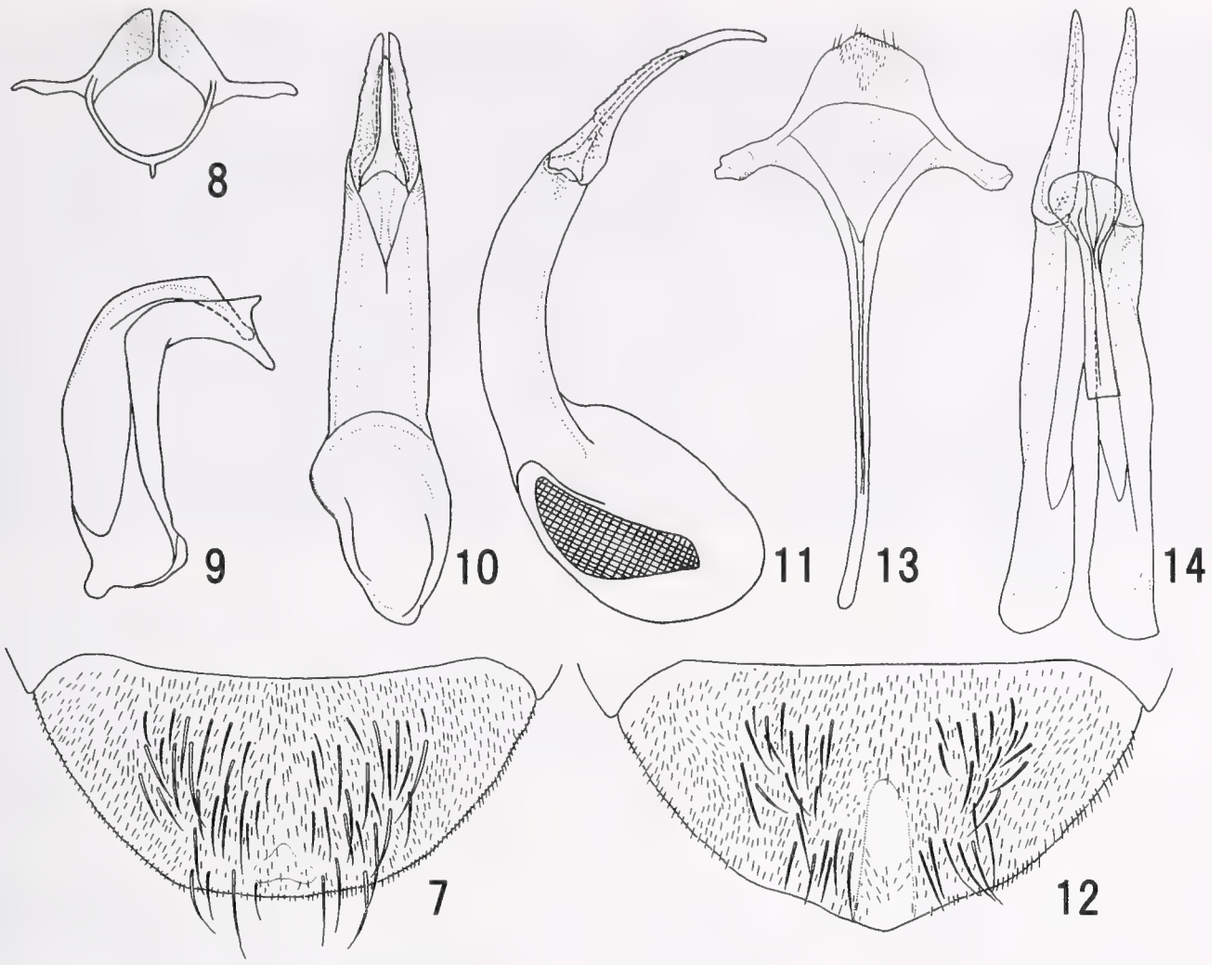

Figs 7–14. *Acontosceles javanicus* sp. nov. **7–11**. male, paratype; **7**. sternite VII; **8**. sternite VIII; **9**. sternite IX; **10**. aedeagus in ventral aspect; **11**. ditto in lateral aspect. **12–14**. female, paratype; **12**. sternite VII; **13**. urosternite; **14**. ovipositor.

in mesal parts. Sternite IX well sclerotized, asymmetrical, strongly curved in apical part. Aedeagus long, well sclerotized, strongly curved ventrally; basal piece oval, strongly expanded ventrally; lateral lobes long and slender, serrate in lateral margins, punctuate in basal parts, pointed at apices; median lobe long and slender, about 0.7 times as long as lateral lobe, tapered evenly apically, pointed at apex; ML = 0.85 mm; MH = 0.42 mm; BL = 0.44 mm; CL = 0.41 mm; LL = 0.36 mm; LBC = 0.23 mm; LBB = 0.51 mm; C = 104°.

Female. Sexual dimorphism distinct in the following characteristics: 1) frons, clypeus and labrum covered with yellowish-silver short setae; 2) apical part of elytra projecting ventro-apically; 3) prosternum between procoxae sparsely covered with short setae; 4) sternite VIII slightly pointed at apex, grabrous in median part; PW/PL 2.19–2.80 (2.55); EL/EW 1.61–1.65 (1.63); EL/PL 3.85–4.86 (4.52); EW/PW 1.07–1.11 (1.09); TL/EW 2.16–2.23 (2.20). Urosternite well sclerotized, with long and slender apodeme; lateral projections long, expanded apically. Ovipositor well sclerotized; coxite closely punctuate, pointed at apices; approximate ratio of coxite and baculus (n = 1) as 5.5 : 10.5.

Measurements. Male (n = 2): TL 2.20 & 2.40 mm; PW 0.95 & 0.98 mm; PL 0.40 mm; EL 1.63 & 1.65 mm; EW 1.05 mm. Female (n = 5): TL 2.23–2.50 (2.39) mm; PW 0.90–1.05 (1.00) mm; PL 0.35–0.48 (0.39) mm; EL 1.65–1.85 (1.76) mm; EW 1.00–1.15 (1.08) mm.

Biological notes. The type locality is a small river, with a water depth of ca. 10–30 cm. This species was found at the spray zone on the surface of sandy rocks with *Pseudeucinetus javanicus* Yoshitomi & Putra, 2010 and *Limnichus* sp.

Remarks. This species is similar to *Acontosceles jaechi* Pütz, 2008 and *A. negrosensis* Pütz, 2008, but differs from them by the following characteristics: lateral lobes serrate in lateral margins (not serrate in *A. negrosensis*); apex of sternite VII evenly arcuate (with small projection as in *A. jaechi*); curvature and morphometric ratios of aedeagus (see Fig. 1).

The new species belongs to the *Acontosceles hydroporoides* species group (sensu Pütz 2008), because the shape of male genitalia is similar to the other species in this species group.

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Figs 15–16. *Acontosceles javanicus* sp. nov. **15**. type locality; **16**. female.

Table 1. Morphometric details of the aedeagi of *Acontosceles* spp.

Species	Distribution	C angle	morphometric ratio MH/ML	BL/CL	LL/ (LBC+LBB)	LBC/ LBB	reference
***hydroporoides*-group**							
chujoi	Laos	121°	0.32	0.92	0.55	0.37	Yoshitomi & Satô (2005)
hydroporoides	India	121°	0.34	0.82	0.61	0.41	Spilman (1959)
jaechi	Philippines	99°	0.46	1.39	0.52	0.25	Pütz (2008)
javanicus	Indonesia	104°	0.49	1.06	0.49	0.44	present study
negrosensis	Philippines	94°	0.53	1.17	0.53	0.32	Pütz (2008)
tagalog	Philippines	102°	0.36	0.90	0.42	0.38	Spilman (1959)
yorioi	Japan, Taiwan	119°	0.37	0.82	0.45	0.61	Yoshitomi & Satô (2005)
***quatuordecimmaculosus*-group**							
quatuordecimmaculosus	Myanmar	127°	0.28	1.11	0.38	0.44	Pütz (2008)
siwalikensis	Nepal	133°	0.27	0.81	0.46	0.58	Pütz (2008)
yunnanensis	China	136°	0.23	0.97	0.41	0.47	Pütz (2008)
zetteli	Thailand	127°	0.29	0.77	0.35	0.70	Pütz (2008)

Etymology. The species is named after the type locality.

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Description of *Monoleptoides* gen. nov. from the Afrotropical Region, including the revision of nine species (Coleoptera: Chrysomelidae: Galerucinae)

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Abstract. Due to their specific external and genitalic patterns, several species of Afrotropical Galerucines, most of them originally described in *Monolepta* Chevrolat, 1837 and *Candezea* Chapuis, 1879, are transferred to the new genus *Monoleptoides*. This group is phylogenetically well defined and comprises nine previously described species, some of them well known, abundant, and widely distributed in tropical Africa. Taxa newly combined with *Monoleptoides* and new synonymies include: *Crioceris duplicata* Sahlberg, 1823 (= *Monolepta pulchella* Klug, 1835; = *Monolepta fasciaticollis* Laboissière, 1940a, syn. nov.; = *Monolepta quinquepunctata* Laboissière, 1940a, syn. nov.); *Monolepta trivialis* Gerstaecker, 1855 (= *Candezea umbilicata* Laboissière, 1920, syn. nov.); *Monolepta didyma* Gerstaecker, 1871; *Monolepta thomsoni* Allard, 1888; *Monolepta advena* Weise, 1910 (= *Monolepta keniensis* Bryant, 1953; syn. nov.); *Candezea centromaculata* Jacoby, 1900; *Candezea horni* Laboissière, 1931; *Candezea mertensi* Laboissière, 1940b; *Candezea sulcata* Laboissière, 1940a (= *Candezea sexplagiata* Laboissière 1940a; syn. nov.). Detailed descriptions for the generotype, *Monoleptoides duplicata* and redescriptions of all species, as well as an identification key are given. Collection data are recorded in detail for the 1190 specimens studied, and summarized in distribution maps.

Key words. Afrotropical region, Africa, taxonomy, revision, biogeography, identification key, synonyms, lectotypes, new genus.

INTRODUCTION

Since the name *Monolepta* Chevrolat, 1837 was introduced, Galerucinae with a distinctly elongate basimetatarsus have traditionally been assigned to this genus. In the last printed catalogue to the Galerucinae (Wilcox 1973), 180 species of *Monolepta* and a further 40 species of *Candezea* Chapuis, 1879 were listed from tropical Africa have been listed. The latter genus was described for species where the third antennomere is distinctly longer than the second, while species with the second and third antennomeres of equal length were retained in *Monolepta*. Most of these species were described between 1890 and 1950 (Wagner 2003a). Descriptions by preceeding authors were based on external characters only, with very few exceptions, and the allocation to *Monolepta* and other genera of the "Monoleptites" (Wilcox 1973) was mostly typological. In our ongoing revision of the Afrotropical taxa of this group, genital patterns proved to be the most usefull characters to distinguish not only species, but also to delimit genera. Since there are no objective criteria to define a "genus", it should at least comprise species forming a monophyletic group, which is defined by autapomorphies. After a comprehensive redescription of the generotype of *Monolepta*, the South African *Monolepta bioculata* (Fabricius, 1781), published some years ago (Wagner 2007) it became obvious that species of *Monolepta* and *Candezea* in their original combinations are polyphyletic, and many species need to be transferred to other taxa (Wagner 2004). Initial studies on the phylogenetic relationships within these genera resulted in an isolated group of species that could easily be separated on morphological as well as molecular data (Wagner 2004, Stapel et al. 2008). This recently recognized taxon is herein formally described as a new monophyletic group. It includes nine previously described species, four of them originally described in *Monolepta*, four in *Candezea*, and the oldest one in *Crioceris* Müller, 1764, which was described before the other two genera had even been established. Six additional species are treated as synonyms, five of them new. All the species are redescribed, the material is examined and recorded in detail, and distribution maps and an identification key are provided.

METHODS

A standard set of figures is given for each species, these include the following: diagrammatic illustrations of the dorsal colouration and the right antenna, where black colouration is depicted by black, yellow colouration by white, and red colouration by grey. Most taxa are very polymorphic, and in those species more than one colouration type is figured. Note that usually transitions between

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*37th contribution to the taxonomy, phylogeny and biogeography of the Galerucinae

the given colouration types occur, i. e. that only typical and frequently found colour types are illustrated. The basal four anntennomeres of each one male and female, dorsal and lateral view of the median lobe including the endophallic structures, and ventral view of the median lobe without the endophallic structures (for classification see Wagner 2000b), and the spermathecae of two different females are figured. Photographs of the primary types of all species are given with all labels, and in detail. Morphometric measurements were made for external characters. Absolute measurements are: Total length from the clypeus to the apex of the elytron, length of elytron, maximal width of both elytra (usually in the middle or in the posterior third of the elytra), and width of pronotum. Relative measurements are: Length to width of pronotum, maximal width of both elytra to length of elytron, length of second to length of third antennomere, and length of third to length of fourth antennomere. The number of specimens measured is given in the description under "total length".

MATERIAL

The subsequent redescriptions are based on 1190 labelled specimens from the following collections (Table 1). Musuem codons used and responsible curators in brackets: Natural History Museum, London (BMNH; S. Shute); private collection Ron Beenen, Nieuwegein, The Netherlands (CRB); private collection Manfred Döberl, Abensberg, Germany (CMD); private collection Horst Kippenberg, Herzogenaurach, Germany (CHK); private collection Lev N. Medvedev, Moscow, Russia (CLM); private collection Vaclav Šilha, Prague, Czech Republic (CVS); Deutsches Entomologisches Institut, Eberswalde (DEIS; L. Behne, L. Zerche); Hungarian Museum of Natural History, Budapest (HMNH; O. Merkl); Institute Royal des Sciences Naturelle de Belgique, Brussels (IRSN; M. Cludts, D. Drugmand, P. Limbourg); Museo Civico di Storia Naturale, Genova (MCGD; R. Poggi); Museo ed Instituto di Zoologia Sistematica, Universitá di Torino (MIZT; M. Daccordi); Manchester Museum, Manchester University (MMMU; C. Johnson); Museo National de Sciencas Naturales, Madrid (MNCN; M. Paris); Musée National d'Histoire Naturelle, Paris (MNHN; N. Berti+); Museum für Naturkunde der Humboldt Universität zu Berlin (MNHU; J. Frisch, J. Willers); Musée Royal d'Afrique Centrale, Tervuren (MRAC; M. de Meyer); Museum of Zoology, Helsinki (MZHF; H. Silfverberg); Museo Zoologico "La Specola", Firenze (MZSF; L. Bartolozzi); Naturhistorisches Museum Basel (NHMB; E. Sprecher); Naturhistorisches Museum Wien (NHMW; H. Schönmann); Naturhistoriska Riksmuseet, Stockholm (NHRS; B. Viklund); National Museums of Kenya, Nairobi (NMK; W. Kinuthia, Ch. Lange); Natuurhistorisch Museum Leiden (NNML; R. de Jong, F. v. Assen), Oxford University Museum of Natural History (OUMNH; G. McGavin); South African National Collection of Insects, Plant Protection Research Institute, Pretoria (SANC; E. Grobbelaar); Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria (TMSA; R. Müller); Texas A & M University, Department of Entomology (TAMU; E. Riley); National Museum of National History, Washington (USNM; D. Furth); Zoologisches Forschungsmuseum Alexander Koenig, Bonn (ZFMK; D. Ahrens, K. Ulmen); Zoological Institute St. Petersburg (ZISP; A. Kirejtshuk); Zoological Institute University of Kopenhagen (ZMUC; M. Hansen †); Zoologisches Institut und Zoologisches Museum der Universität, Hamburg (ZMUH; H. Riefenstahl).

Collection data of the examined specimens are recorded in detail. Label data for primary type specimens is cited verbatim, for all other specimens localities are recorded as precisely as possible. Country names and feature classes with traditional names are listed, usually with their current data. Geographical coordinates given in degree and minutes for locally data given like decimal data. These coordinates were mostly taken from the Alexandria Digital Library Gazetteer Server. Localities of the former Belgian Congo and also referred to as Congo (Zaire), in particular, were taken from a gazetteer compiled by Ugo DallAsta (MRAC).

DESCRIPTION OF MONOLEPTOIDES GEN. NOV.

Type of the genus (by current designation):
Crioceris duplicata Sahlberg, 1823.

Total length. 3.90–7.20 mm.

Head. Pale yellow, yellow or reddish-yellow, very few specimens with dark brown frons and vertex. If head reddish, frons often paler than vertex. Head transverse, with a distinct transverse depression between the posterior third of eyes (Fig. 2a–e), sometimes with small triangular tubercles between eyes (Figs 3a–c, 4a–d), finely punctuated. Labrum, palpi and antennae pale yellow to yellow, maxillary palpi with long and slender terminal palpomere (Fig. 1a). Three basal antennomeres with a few sparse setae, fourth to eleventh antennomeres finely pubescent (Fig. 1d). Usually only terminal antennomere with black tip, in few specimens up to five apical antennomeres brownish to black; antennomeres four to eight black in contrast with the pale basal and apical antennomeres in *M. horni* only (Fig. 5a). Antennomeres long and slender, particularly in females, third antennomere distinctly longer than second (length of second to third antennomere 0.53–0.88), fourth varying from double the length of the third, to only one quarter longer (length of third to fourth antennomere 0.47–0.77 (Figs 2g, h, 6e, f).

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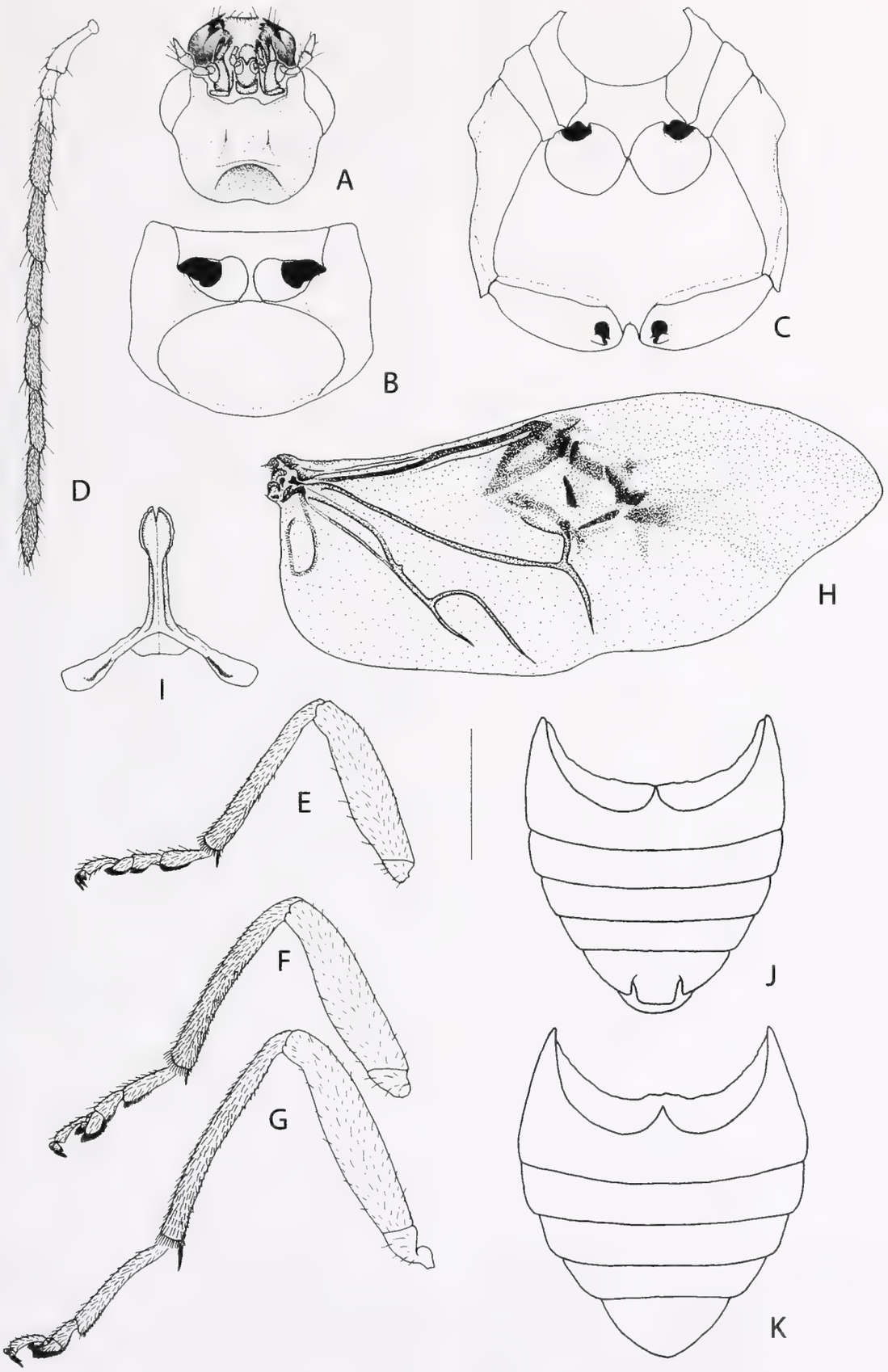

Fig. 1. Morphology of the type species of *Monoleptoides* gen. nov., *Monoleptoides duplicata* (Sahlberg, 1823). **a.** Head, ventral. **b.** Prothorax, ventral, coxal cavity openings black. **c.** Meso- and metathorax, ventral, coxal cavity openings black. **d.** Antenna. **e.** Fore-leg. **f.** Middle-leg. **g.** Hind-leg. **h.** Hind-wing. **i.** Metendosternite. **j.** Abdomen, male. **k.** Abdomen, female. Scale bar: 1 mm.

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Thorax. Pronotum yellow to reddish-yellow; a few specimens of some species with either a black median spot (Figs 2d, 7e, and 8b); black basal triangle (Fig. 2e); broad black medial longitudinal band (Fig. 8c); or in *M. sulcata*, two black dorsolateral patches (Fig. 9b, c). Pronotum with double punctuation, very fine and additionally much coarser, not pubescent. Anterior half of pronotum distinctly convex, with an arched transverse depression in posterior half, most distinct in *M. mertensi* and *M. sulcata* (Figs 6a–c, 9a–c), but also visible in all other species if they are viewed dorso-laterally. Pronotum transverse, broad, median length to maximum width 0.56–0.74. Prothoracic coxal cavities closed behind, prosternal process slightly enlarged posteriorly (Fig. 1b). Metasternum broad (Fig. 1c), shape of metendosternite as in Fig. 1i. Elytra coarsely punctuated, not pubescent, elongate, sub parallel to ovate. Specimens with pale yellow to yellow elytra (dorsum thus completely yellow) occur in all species except *M. sulcata*, and in about 60 % of the material studied. In most species there are also specimens with a more or less broad black elytral base, extending onto the epipleura for up to half their length (Figs 2c–e, 7c–e, 8b, c, 6c, 9b); these specimens usually also have a transverse black band in the posterior third of the elytra. Other specimens have only black humeral spots or a transverse basal patch, neither of which reaches the outer elytral margins (Fig. 2b), forming a diagnostic pattern for some species (Figs 3b, c, 4b–d, 10b–d). Two species have a brownish-red elytral base and tip (Fig. 7b), sometimes with a sub medial spot (Fig. 6a), and in one species the elytra are predominantly black with a reddish apical part (Fig. 9a). Length of elytron 2.90–5.80 mm, maximal width of both elytra together 1.85–4.30 mm, width of both elytra to length of elytron 0.58–0.78. Scutellum yellow, yellowish-red, or very rarely black. Legs pale yellow to yellow, femora sparsely pubescent, tibiae and tarsi more densely setose, and bristle-like (Fig. 1e–g). First tarsomere on all legs elongate, in particular the basi-metatarsus that is about half the length of the meta-tibia (Fig. 1g). Tarsal claws with a distinct basal tooth, bifid. Hind wings fully developed (Fig. 1h).

Abdomen. Pale yellow to yellowish-red, rarely darker and then appearing brownish-red. Apical margin of anal sternite with two deep incisions in males (Fig. 1j), rounded in females (Fig. 1k).

Male genitalia. Median lobe bilaterally symmetrical, slender, more or less parallel-sided (Figs 2i–n, 4h–j, 5e–g, 7i–n, 9g–i, 10h–j), widening slightly towards the base and sub apically in some species (Figs 3g–i, 8g–i, 6g–i, 10k–m). Straight to slightly curved ventrally towards apex, more or less deeply incised apically. Endophallus with a medial group of long, slender spines, one to three pairs of them more robust. Ventrad of these spines is a slightly more distinctly sclerotized "ladder-like" patch, which is positioned above the apex when the endophallus is everted (Fig. 7j). Tectum long, almost reaching the apical incision.

Female genitalia. Spermatheca with small ovate to spherical nodulus and very broad, cap-like cornu that is short in six species (Figs 2o, 3j, 4k, 7o, 8j, 10n) but slender and elongate in the three other species (Figs 5h, 6j, 9j). There are two pairs of bursal slecrites that differ slightly from one another.

Distribution. Beetles of this group are distributed nearly throughout the Afrotropical Region with exception of Madagascar. *Monoleptoides duplicata* shows the widest distribution from Guinea to Ethiopia in the North and in Eastern Africa towards Natal in the South. Some species, like *M. didyma*, *M. trivialis*, and *M. advena* are restricted to eastern Africa, or show a restricted distribution along the Albertine Rift like *M. sulcata*, the Congo Basin like *M. mertensi* or Western-Central Africa like *M. horni*.

Diagnosis. Four of the valid species of *Monoleptoides* gen. nov. were originally described in *Monolepta*; another species, *C. duplicata*, was transferred to *Monolepta* a long time ago (Weise 1924); and another four species were originally described in *Candezea*. The revision of the latter genus has already been completed (Wagner & Kurtscheid 2005), whereas the revision of the about 100 valid species of Afrotropical *Monolepta* is still in progress. A revision of the genotype, *M. bioculata*, has been published (Wagner 2007). The genus *Dyolania* Laboissière, 1931 needs to be included with these two genera in this diagnosis. *Dyolania* was synonymized with *Monolepta* by Wilcox (1973), but as a recent revision (Bauer & Wagner 2010) reveals, it was re-established and is most likely the sister taxon of *Monoleptoides* gen. nov. Specimens of *Monoleptoides* gen. nov. can be distinguished from those of *Monolepta*, *Candezea* and *Dyolania* by the following characters:

The antennae are long, the antennomeres distinctly elongate as in *Dyolania* and *Candezea*, while *Monolepta* have shorter antennae. *Monolepta* can be distinguished by antennomeres two and three of nearly the same length (length of second to third antennomere: 0.82–1.10) while the third antennomere in *Candezea* is more distinctly elongate (0.49–0.63), and *Monoleptoides* gen. nov. clearly falls between these two (0.53–0.88). Since *Monolepta* and *Candezea* are traditionally distinguished by the ratio of the length of the second to the third antennomere, the original description of the species now included in *Monoleptoides* gen. nov. in both these genera, is not surprising.

Monoleptoides gen. nov. can be distinguished comparatively easily by the coarse punctuation of pronotum and elytra, that does not occur in the other groups named

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above. This punctuation is sometimes difficult to see and the specimen should be observed whilst illuminated from the side. The more or less distinct transverse pronotal depression, a character that does not occur in *Monolepta* and *Candezea* but is found in *Dyolania*, can also be more easily observed under such lighting. *Monoleptoides* gen. nov. are on average more slender than species of *Monolepta*. *Candezea* has similarly narrow elytra, but the elytra bulges more distinctly dorso-ventrally. *Dyolania* is even more slender than *Monoleptoides* gen. nov.

With some experience the characters given above allow a fairly good differentiation of the specimens of *Monoleptoides* gen. nov. from the other taxa, but the genitalia of both sexes offer far better diagnostic structures. In females the spermatheca is poorly sclerotized and has a characteristic shape. Its shape with a small nodulus, and an enlarged, cap-like cornu is only known from *Monoleptoides* gen. nov. Females of the other genera have a longer and far more slender cornu. The spermathecae of *M. horni*, *M. mertensi*, and *M. sulcata* are more similar to *Monolepta*, but at least the proximal part of the cornu is much larger than in any *Monolepta* species.

The best diagnostic character to identify species of *Monoleptoides* gen. nov. and to distinguish this genus from other closely related genera, is the shape of the median lobe and the structure of the endophallic armature. Neither *Monolepta* nor *Candezea* have apically incised median lobes. Within Afrotropical galerucines possessing this character is typical for the metallic bluish *Barombiella* Laboissière, 1931 (Wagner & Freund 2003) and *Bonesioides* Laboissière, 1925 (Freund & Wagner 2003), which both have a much shorter median lobe, and *Galerudolphia* Hincks, 1949, which are small, slender, dorso-ventrally compressed leaf beetles with a trapezoidal pronotum (Bolz & Wagner 2005). The general shape of the median lobe is most similar to that of *Dyolania*, which also has an apical incision, but there are differences in the endopahllic armature. This genus is most likely to be the sister taxon to *Monoleptoides* gen. nov., however, differences in dorsal punctuation (very fine in *Dyolania*), the construction of the prothoracic coxal cavities (open), and the shape of the spermatheca (short, slender cornu with bottle-like nodulus), expose the generic differentiation.

REDESCRIPTIONS OF SPECIES

***Monoleptoides duplicata* (Sahlberg, 1823)**, comb. nov.
Crioceris duplicata Sahlberg, 1823: 69 (Sahlberg 1829).
Monolepta pulchella Klug, 1835, nomen nudum (Weise 1924, Wilcox 1973).
Monolepta fasciaticollis Laboisière, 1940a: 67; syn. nov.
Monolepta quinquepunctata Laboissière, 1940a: 67; syn. nov.

Total length. 4.30–5.50 mm (mean: 4.95 mm; n = 20).

Head. Pale yellow, yellow or reddish-yellow, very few specimens with dark brown frons and vertex. If head reddish, frons usually paler than vertex (Fig. 2c), labrum, palpi and antenna pale yellow to yellow, usually only terminal antennomere with black tip (Fig. 2a–d). Only a few specimens with two brownish sub terminal antennomeres (Fig. 2e). Antenna comparatively short, antennomeres slender. Length of second to third antennomere 0.74–0.85 (mean: 0.80), males in particular with short third antennomere (Fig. 2g), length of third to fourth antennomere 0.54–0.65 (mean: 0.57).

Thorax. Pronotum yellow to reddish-yellow (Fig. 2a–c), rarely (8 % of material examined) with small circular or larger, triangular median black spot (Fig. 2d, e), distinctly convex (Fig. 2f). Pronotum broad, median length to maximum width 0.63–0.68 (mean: 0.66). Elytra in about half of the material examined completely yellow (Fig. 2a). This type of colouration occurs mainly in Central and East Africa where about two thirds of all specimens are yellow, while 90 % of the specimens from West Africa have broad basal and sub terminal transverse black bands (Fig. 2c). Broad transverse elytral bands are usually correlated with a yellowish-red pronotum. Length of elytron 3.15–4.50 mm (mean: 3.87 mm), maximum elytral width 2.30–3.40 mm (mean: 2.82 mm). Width of both elytra to length of elytron 0.68–0.77 (mean: 0.73). Scutellum yellow (Fig. 2a–d), very rarely black (Fig. 2e). Legs pale yellow to yellow.

Abdomen. Pale yellow to yellowish-red.

Male genitalia. Median lobe widening slightly in the basal third and sub apically, bluntly rounded at apex and slightly incised (Fig. 2i, k), distinctly narrower sub apically in small specimens (Fig. 2l–n), endophallus usually with three pairs of spiculae of different lengths.

Female genitalia. Spermatheca with small nodulus and very broad cornu with a short tip (Fig. 2o).

Diagnosis. *Monoleptoides duplicata* shows a high degree of similarity in body size, body shape and colouration patterns to *M. thomsoni* in particular. Both species occur sympatrically over a wide range, *M. duplicata* being more frequent in East and specifically in south Central Africa, whilst *M. thomsoni* is dominant in West Africa. Both species cannot be definitively distinguished using external characters. *Monoleptoides duplicata* is on average smaller (total length 4.30–5.50 mm) and its pronotum is more distinctly transverse (pronotal length to width 0.63–0.68) than in *M. thomsoni* (total length 4.40–6.00 mm, pronotal length to width 0.66–0.74).

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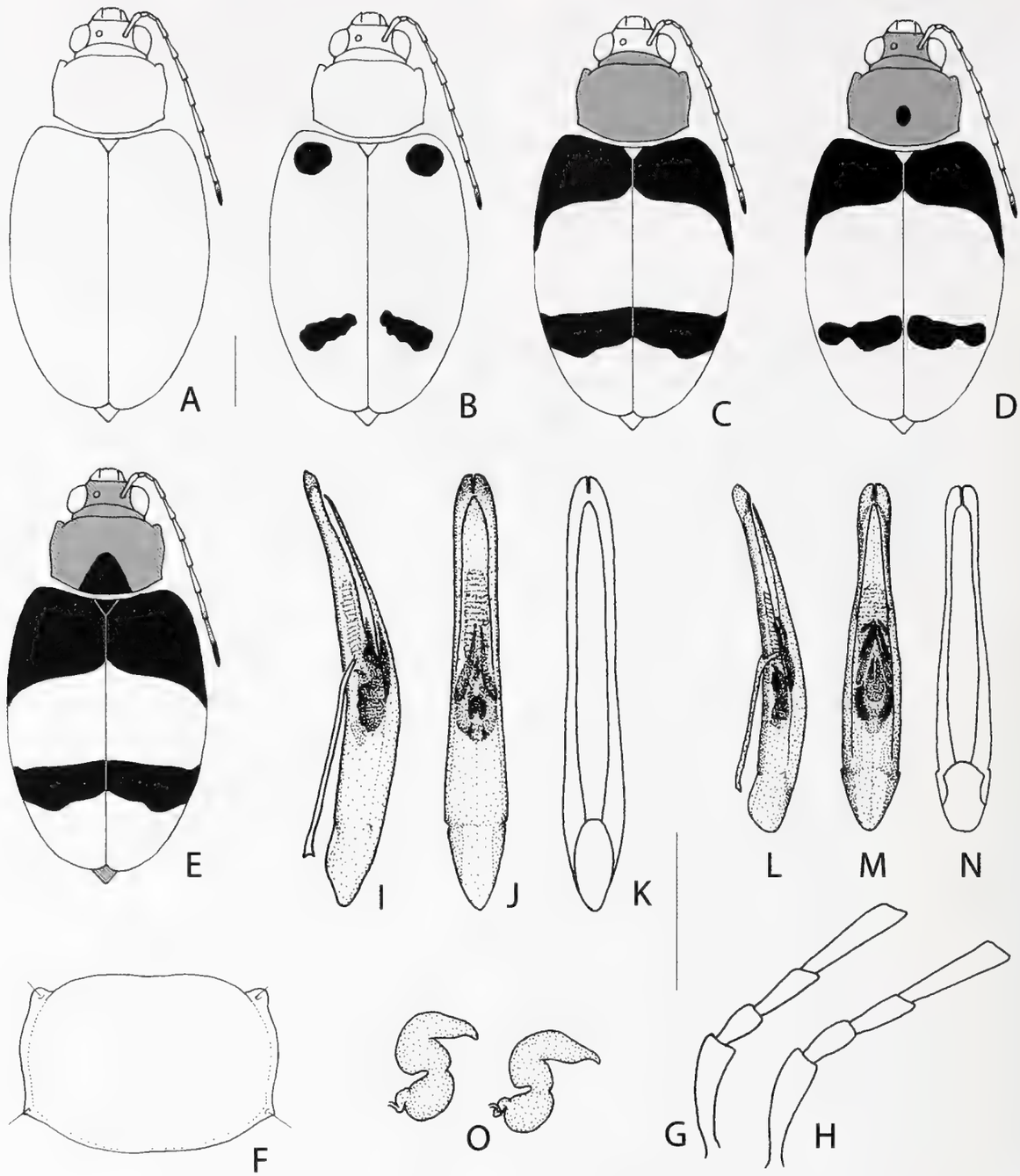

Fig. 2. Morphology of *Monoleptoides duplicata* (Sahlberg, 1823). **a–e.** Habitus showing typical colour variation. **f.** Pronotum, detail. **g, h.** Basal antennomeres one to four of male (g) and female (h). **i–k.** Median lobe of a typical specimen, lateral (i), dorsal (j), and ventral without endophallic structures (k). **l–n.** Median lobe of small specimens, lateral (l), dorsal (m), and ventral without endophallic structures (n). **o.** Spermathecae of two different females. Scale bars: 1 mm.

Monoleptoides duplicata is often entirely yellow, which is comparatively rare in *M. thomsoni*. Most specimens of *M. thomsoni* have small elytral bands (Fig. 7c) while most specimens of *M. duplicata* have stronger black elytral colouration (Fig. 2c). However, both species can only be reliably distinguished by the male genitalia, the allocation of females to species is sometimes almost impossible. The median lobe is slightly curved ventrally and has a bluntly rounded apex in *M. duplicata* (Fig. 2i–n), while *M. thomsoni* has a straight median lobe with a pointed apex (Fig. 7i–n). Despite both species having a wide overlap in geographical distribution, they seem to prefer different habitats. Based on about 600 specimens with detailed collecting site data, only four places could be identified where both species obviously occur syntopically (Dalaba and Tabuna Valley, both in Guinea; Garamba National Park in north-eastern DRC; and Bambesa in southern DRC). In southern Africa *M. duplicata* may be confused with *M.*

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centromaculata, but broad elytra (Fig. 8a–c) and the very broad median lobe (Fig. 8g–i) of the latter species allow effective differentiation between the two species. To distinguish *M. duplicata* from *M. advena*, a species restricted to Kenya and northern Tanzania, dissection of genitalia is necessary in entirely yellow specimens, where *M. advena* has a comparatively short, broad and parallel-sided median lobe (Fig. 4h–j).

Distribution and geographical variation. Widely distributed in savannah and tropical forest zones from Sierra Leone to east Uganda and the Katanga Province in southeastern DRC, with very few further south- and eastwards (Fig. 11), concentrated mainly in the Guineo-Congolian forest area. Alongside *M. thomsoni* this is the most abundant and widely distributed species in the group. Specimens with a reddish head and pronotum (Fig. 2c–e) are more frequent in West Africa and Uganda, most specimens from southern DRC have small black spots (Fig. 2b) or are entirely yellow (Fig. 2a). As in *M. trivialis* and *M. thomsoni*, entirely yellow specimens are predominately from savannah localities. Specimens from a single location e. g. Malela (8 ex.) show continuous variation, from entirely yellow to forms with black elytral bands. So specimens from the Bambesa and Moto populations (21 ex.; including the type specimens of *M. fasciaticollis* and *M. quinquepunctata*) and Kampala (7 ex.). The large collection from Kapanga at Lulua River in southern DRC (99 ex.) are all, without exception, entirely yellow. So too is the material from Kaniama and Luisa (20 ex.), and the specimens (3 ex.) from Mlanje, all from the same region.

Type material

Crioceris duplicata: Holotype, ♂, "S. Leona, Afzelius / Duplicata, Sahlb. nov. sp. Inf." (NHRS; Fig. 20a). Type locality: Sierra Leone, no details available, examined. Only this specimen, displaying all the data recorded in the original description "Sierra Leone Africae. D. Afzelius", is available in NHRS. It can be treated as the holotype by inference. Two further specimens in this collection are marked with paratype labels, but are not valid types: 1 ♀ "Guinea, Westerman" and ♂ "Moyamba, S. Leone duplicata Sahlb.". The original description was published in a monographic series (Sahlberg 1823). It was repeated, with minor changes, in a journal six years later (Sahlberg 1829). Only two additional colour variations are mentioned in this later version.
Monolepta pulchella: Types, reported to be in MNHU, were not be found there. I follow the synonymy recorded in the catalogues of Weise (1924), and Wilcox (1973).
Monolepta fasciaticollis: Lectotype, ♂, "Type / Holotype fasciaticollis / Congo belge: P. N. A. Rwindi 1000 m 20 au 24-xi-1934 G. F. de Witte: 773 / Coll. Mus. Congo / R. Dét. G 4587 / Monolepta fasciaticollis m. V. Laboissière – Dét." (MRAC; Fig. 20b). Type locality: Democratic Republic of the Congo, Lake Kivu region, Rwindi, 0.47S/29.17E, examined. There are two syntypes listed in the original description and a lectotype is herein designated to fix the name on single specimen. – Paralectotype: 1 ♂, "May ya Moto, 950 m, 6 au 9–XI.1934, G. F. de Witte: 729" (IRSN).
Monolepta quinquepunctata: Holotype, ♀, "Type / Congo belge: P. N. A. Rwindi 1000 m, 20 au 24-xi-1934 G.F. de Witte: 773 / 6. Okt. / Monolepta quinquepunctata m. V. Laboissière – Dét. / Type M. quinquepunctata / R. Det. i 4586 / Coll. Mus. Congo" (MRAC; Fig. 20c). Type locality: Democratic Republic of the Congo, Lake Kivu Region, Rwindi, 0.47S/29.17E, examined. Holotype by inference, a single male (but the specimen is actually a female) is mentioned in the original description.

Further material examined

Benin. 2 ♂, Agoué, 6.13N/1.40E, 1879, Abbe Ménager (MNHN); 1 ♀, Dahomey, Mus. Hauschild (ZMUC). – **Burundi.** 1 ♂, Usumbura, Ngwelo, 3.57S/29.47E, coll. Clavareau (MRAC); 3 ♂, Usumbura, I.1926, H. Schouteden (MRAC); 1 ♂, Prov. Cibitoke, 3.18S/29.24E, II.1989, C. J. M. Berger (CRB). – **Cameroon.** 1 ♀, Kibati, 3.46N/9.45E (MNHU); 2 ♂, Bitye ja river, 3000 feet, ex. coll. Oberthur (MNHN); 5 ♀, Farc GR, 8.23N/12,50E, IV.2007, Gallery Forest, fogging Cola laurifolia, Jocque et al. (IRSN). – **Congo (Zaire).** 1 ♂, Beni Bendi, 0.30N/29.28E, Sankuru, I.1895, L. Cloetens (IRSN); 1 ♀, VIII.1898, Dybowski (MNHN); 2 ♀, Elisabethville, 11.40S/27.28E, X.1911, Miss. Agric. (MRAC); 8 ♀, 6 ♂, Malela, 4.22S/26.08E, XII.1913, Burgeon (MRAC); 1 ♂, Bumbuli, 3.24S/20.21E, IV.1915, R. Mayné (MRAC); 2 ♀, 3 ♂, Kasai, Luisa, 6.07S/19.26E, 1921, L. Achten (MRAC); 1 ♂, Watsa à Niangara, 3.42N/27.52E, VII.1920, L. Burgeon (MRAC); 1 ♂, Luluabourg, 5.54S/22.25E, XI.1921, L. Achten (MRAC); 1 ♂, Haut-Uele, Watsa, 3.03N/29.32E, 1922, L. Burgeon (MRAC); 1 ♀, 2 ♂, Haut-Uele, Moto, 2.54N/28.37E, VI.–VII.1923, L. Burgeon (MRAC); 2 ♀, Likimi, 2.50N/20.45E, X.1927, A. Collart (IRSN); 1 ♂, Kivutu Kumbi, II.1924 (ZMUH); 1 ♀, Faradje, Mongapi, 3.44N/29.43E, IV.1930, A. Collart (IRSN); 10 ♀, 5 ♂, Lomami, Kaniama, 7.34S/24.11E, 1931, III.–V.1932, R. Massart (MRAC); 2 ♀, 3 ♂, Uele, Dingila, 3.39S/26.04E, X.1932, J. Vrydagh (MARC); 38 ♀, 61 ♂ (16 ♂ dissected) Lulua, Kapanga, 10.37S/24.54E, VIII., XII.1932, IX., XI.1933, G. F. Overlaet (MRAC); 8 ♀, 3 ♂, Bambesa, 3.28N/25.43E, X.1933, III.1937, IV.,V.1937, II.,X.1938, X.1939, J. V. Leroy / J. Vrydagh (5 ex. IRSN, 6 ex. MRAC); 1 ♂, Luisa, Tulume, 7.18S/22.40E, V.1935, Mme Gillardin (MRAC); 2 ♂, NW-Ruwenzori, Watalinga, 0.40N/29.40E, VI.1937, Listranc (MRAC); 1 ♂, Kasenyi, 7.26S/24.10E, VIII.1937, Bredo (MRAC); 1 ♀, P. N. U., Businga, Sange, 3.20N/20.50E,

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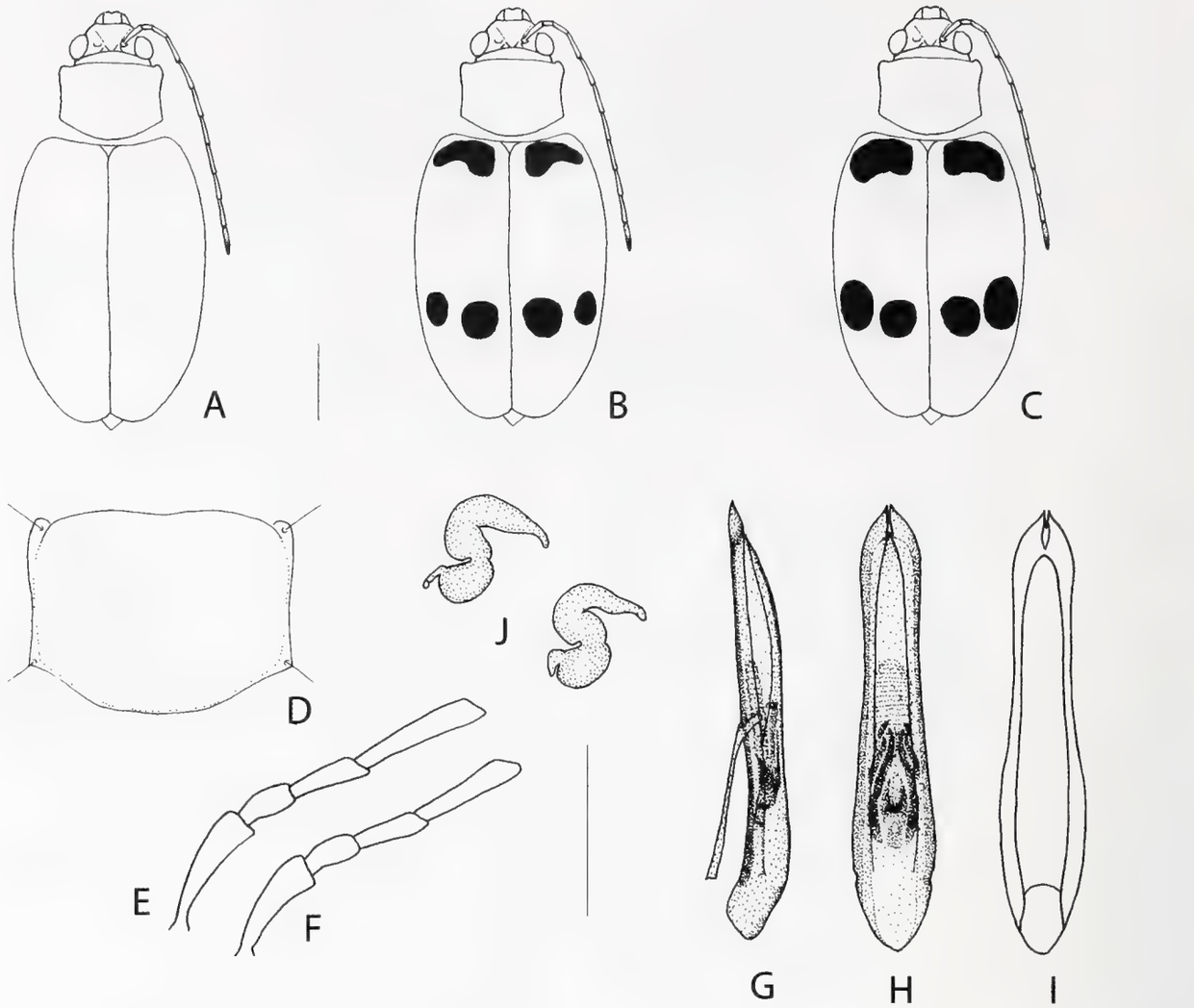

Fig. 3. Morphology of *Monoleptoides trivialis* (Gerstaecker, 1855). **a–c.** Habitus showing typical colour variation. **d.** Pronotum, detail. **e, f.** Basal antennomeres one to four of male (e) and female (f). **g–i.** Median lobe, lateral (g), dorsal (h), and ventral without endophallic structures (i). **j.** Spermathecae of two different females. Scale bars: 1 mm.

VI.1945, Miss. G. F. de Witte (IRSN); 1 ♂, P. N. Upemba, Lusinga, 8.56S/27.12E, 1760 m, IV.1947, Miss. G. F. de Witte (IRSN); 1 ♀, 2 ♂, P. N. Upemba, R. Mubale, 8.33S/27.21E, 1480 m, V.1947, Miss. G. F. de Witte (IRSN); 1 ♂, P. N. Upemba, Riv. Munte, 8.40S/28.45E, 1480 m, V.1947, Miss. G. F. de Witte (IRSN); 2 ♀, 4 ♂, P. N. Upemba, Mukana, 9.15S/27.12E, 1810 m, III.1948, Miss. G. F. de Witte (IRSN); 1 ♂, P. N. Upemba, R. Lufwa, 9.40S/27.11E, 1700 m, III.1948, Miss. G. F. de Witte (IRSN); 2 ♂, N. Lac Kivu, Rwankwi, 2.30S/28.00E, IV.1948, J. V. Leroy (MRAC); 1 ♀, P. N. Upemba, Katongo, 8.48S/26.59E, 1750 m, IV.1948, Miss. G. F. de Witte (IRSN); 1 ♀, 1 ♂, P. N. Upemba, Mbuye Bala, 8.54S/26.53E, 1750 m, IV.1948, Miss. G. F. de Witte (IRSN); 1 ♀, P. N. Upemba, Munoi bif Lupiala, 8.45S/26.46E, 890 m, VI.1948, Miss. G. F. de Witte (IRSN); 1 ♂, P. N. Upemba, Kabwekanono, 5.48S/28.34E, 1815 m, IX.1948, Miss. G. F. de Witte (IRSN); 1 ♂, P. N. Upemba, Kismokoto-Kiwakishi, 9.09S/27.11E, 1070 m, X.1948, Miss. G. F. de Witte (IRSN); 4 ♀, 6 ♂, P. N. Upemba, Kabwe s/Muye, af. Lufira, 8.49S/26.49E, 1329 m, V.1948, Miss. G. F. de Witte (IRSN); 1 ♀, P. N. Upemba, Mabwe, 8.39S/26.31E, 585 m, I.1949, Miss. G. F. de Witte (IRSN); 3 ♀, 7 ♂, P. N Upemba, Kanonga, 9.15S/26.08E, 675 m, II.1949, Miss. G. F. de Witte (MRAC); 12 ♀, 6 ♂, P. N. Garamba, 3.40N/29.00E, several locations, X.1950, XII.1951, IV., VI.–VII.1952, Miss. H. de Saeger (17 ex. IRSN, 1 ex. MRAC), 1 ♂, Station de Gandajika I.N.E.A.C., 6.45S/23.57E, 1957, P. de Francquen (MRAC); 1 ♀, Reg. Thysville, Bas-Congo, 5.15S/14.52E, 1959/1963, R. Michaux leg (MRAC); 1 ♂, P. N. Albert (Ruwenzori), Ibatama, 1690 m, V.1958, P. Vanschuytbroeck (MRAC); 24 ♀, 29 ♂ (15 ex. genitalia dissected), Terr. de Kasongo, River Lumami, 4.27S/26.40E, VIII.1959, II./III.1960, P. L. G. Benoit (MRAC). – **Equatorial Guinea.** 1 ♂, Nkolentangan,

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1.31N/9.51E, XI.1907–V.1908, G. Tessmann (MNHU). – **Ethiopia.** 1 ♀, Abessinia, Dimitiev (ZISP); 4 ♀, pr. Illubabor, 8.05N/35.45E, 30 km W of Abobo, VIII.1988, L. Medvedev "on Cucurbitaceae" (CM). – **Ghana.** 6 ex., Gold Coast (MMMU); 1 ♂, Kumasi, 6.43N/1.36W, II.1975, K. Adlbauer (ZFMK). – **Guinea.** 5 ♀, Guinea, Mus. Westermann (ZMUC); 1 ♀, ex. Ancey, 7.22N/9.04W, coll. M. Pic (MNHN); 1 ♀, Camayenne, 6 km de Konakry, 9.32N/13.41W, 1909, L. Duport (MNHN); 1 ♀, 1 ♂, Dalaba, 10.47N/12.12W, 1200 m, VIII.1945, H. Durand (MNHN); 1 ♀, 1 ♂, Tabuna Valley, 9.31N/12.26W, IX.1983, II.1984, C. B. Myrzin (CLM). – **Ivory Coast.** 1 ♀, Limbroko, 6.59N/3.39W (IRSN); 1 ♀, Haut-Sassandra, pays Dyola, 1910, A. Chevalier (MNHN); 1 ♀, 4 ♂, Koun-Abronso, 7.31N/3.15W, IX., X., XI.1961, J. Decelle (MRAC); 1 ♂, Bingerville, 5.20N/3.53W, VIII.1961, I.1963, I.1964, J. Decelle (MRAC); 1 ♀, Odienne, 9.36N/7.32W, III.1973, V. Viltard (MNHN). – **Kenya.** 1 ♂, Thika, 1.03S/37.05E, I.1927, A. F. J. Gedye (NMK); 1 ♂, Kisumu, 0.06S/34.45E, IV.1936, H. J. A. Turner (NMK); 1 ♀, 1 ♂, Emali Range, Sultan Hamud, 2.06S/38.28E, coll. No.10742, III.1940 (BMNH); 1 ♂, Malindi, 3.13S/40.07E, XI.–XII.1989, L. Bartolozzi et al. (MZFS); 1 ♂, Taita Hills, 3.24S/38.22E, V. Clausnitzer (ZFMK); 1 ♀, Mt. Nyiru, 2.09N/36.50E, dense woodland, 2100 m, Malaise trap, R. de Jong & C. Lepelaar (NNML). – **Malawi.** 3 ♂, Mlanje, 16.05S/36.29E, 800 m, IV.1913, X. 19913, S. A. Neave (BMNH). – **Mozambique.** 2 ♀, Caia, 17.49S/35.23E, Zambesi, VIII.1911, H. Swale (BMNH); 1 ♂, Valley of Kola ri., 15.12S/33.10E, 650 m, IV.1913, S. A. Neave (BMNH); 1 ♀, 2 ♂, Lourenzo Marques, 25.58S/32.25E, VIII.1921, C. B. Hardenberg (MNHU). – **Sierra Leone.** 1 ♀, "Monolepta bifasciata F. / S. R." (MNHU); 1 ♀, "S. L." (OUMNH); 1 ♂, coll. Kraatz (DEIS); 1 ♀, 1 ♂, Sierra Leone, 8.30N/12.00W, Don Kier, ex. coll. J. Weise, „duplicata Sahlb. / pulchella Klug" (MNHU); 1 ♀, ex coll. J. Weise (MNHU); 2 ♀, Sierra Leone, 58.166 (BMNH); 1 ♀, Mayeppa, 9.08N/12.0W, IX.1912, J. J. Simpson (BMNH); 1 ♂, 8.VIII.1895, ex coll. R. Oberthur (MNHN); 1 ♂, coll. Clavareau (MRAC); 1 ♀, 2 ♂, Sierra Leone, ex mus. Allard 1899 (MNHN); 2 ♀, 2 ♂, Rhobomp, 9.05N/12.54W, coll. Fry, 1905 (BMNH); 1 ♂, VIII.1909, ex coll. R. Oberthur (MNHN). – **South Africa.** 1 ♂, Durban, 29.51S/31.01E, P. Reineck (MNHU); 1 ♂, Zululand, Cape Vidal NR, 28.07S/32.34E, IV.1975, P. E. Reavell (TMSA); 1 ♂, Natal, Sordwana Bay, 27.32S/32.41E, IV.1976, P. E. Reavell (TMSA). – **Tanzania.** 1 ♂, Usambara (MNHU); 1 ♂, Nyassa-See, Langenburg, 9.01S/33.39E, Fülleborn (MNHU); 5 ♀, 7 ♂, Ukerewe Island, 2.09S/32.52E, Conrad (NMK); 1 ♀, Lindi, 10.01S/39.43E, VII.1891, Conradt (MNHU); 1 ♂, Nguela, 4.45S/38.30E, Heyne 900 (ZISP); 1 ♂, Mombo, 4.54S/38.18E, ex coll. J. Weise, "trivialis Sahlb." (MNHU); 2 ♀, 1 ♂, Kwai, 4.44S/38.21E, Paul (MNHU); 3 ♀, 1 ♂, Usambara, Nguelo, 4.45S/38.30E (ZMUH); 3 ♀, 2 ♂, Usambara, Derema, 4.45S/38.30E, 850 m, VIII.–IX.1891, L. Conradt (MNHU); 1 ♂, Sakarre, 4.58S/38.21E, IX.02 (MNHU); 1 ♂, Amani, 5.09S/38.36E, II.1906, Vosseler (MNHU); 1 ♀, D. Sambesi Gebiet, X.1906, F. Seiner (MNHU); 1 ♂, Muansa, 2.31S/32.54E, IV.1915, Holtz (MNHU). – **Togo.** 1 ♂, Bismarcksburg, 8.15N/0.55E, XII.1892, L. Conradt (MNHU). – **Uganda.** 1 ♂, Entebbe, 0.05N/32.29E, VII.1911, S. A. Neave (BMNH); 1 ♀, Northern Buddu, 0.25S/31.40E, 3800 ft., IX.1911, S. A. Neave (BMNH); 1 ♂, Buamba Forest, 0.50N/30.03E, Semliki Valley, XI.1911, S. A. Neave (BMNH); 1 ♂, Mpanga Forest, 0.15N/32.05E, Toro, 4800ft, XI.1911, S. A. Neave (BMNH); 1 ♀, Entebbe, I.1912, S. A. Neave (BMNH); 1 ♀, between Sezima River and Kampala, VIII.1912, S. A. Neave (BMNH); 2 ♀, Entebbe, I.1912, V.1914, S. A. Neave (BMNH); 1 ♂, Mubande, I.1923, H. Hargreaves (NMK); 1 ♂, Mabira Forest, 0.30N/32.55E, X.1937, T. H. E. Jackson (NMK); 1 ♂, Osiri, N-Kavirondo, VI.1943, H. J. A. Turner (NMK); 1 ♂, Busia, 0.28N/34.02E, VI.1940, A. F. J. Gedye (NMK); 11 ♀, 5 ♂, Kampala, 0.19N/32.35E, VI.1940, XII.1946, XII.1952, A. F. Gedye (7 ex. BMNH, 8 ex. NMK, 1 ex. USNM); 1 ♀, 2 ♂, Kalinzu Forest, 0.25S/30.05E, IX.1947, A. F. J. Gedye (NMK); 1 ♀, Bwamba Forest, III.1948, J. G. Williams (NMK); 2 ♂, Tororo Forest, 0.41N/34.05E, V.1956, R. Carcasson (NMK); 2 ♂, Bwamba Forest, III.1972 (CRB); 1 ♂, Kibale NP, 0.50N/31.06E, 1600 m, VII.–VIII.1998, L. Schmidt (ZFMK); 2 ex., Bwindi NP, 0.42S/30.43E, X.2002, V. Silha (CVS). – **Zimbabwe.** 1 ♂, Mutare, 18.58S/32.40E, Bvumba Rd. km 16, VIII.1998, Marlin E. Rice (TAMU).

***Monoleptoides trivialis* (Gerstaecker, 1855)**, comb. nov.
Monolepta trivialis Gerstaecker, 1855: 638.
Candezea umbilicata Laboissière, 1920: 51; syn. nov.

Total length. 4.10–5.40 mm (mean: 4.66 mm; n = 12).

Head. Pale yellow to yellow, including palpi and antennae, only terminal antennomere brown (Fig. 3 a–c), sub terminal antennomeres rarely brownish-yellow. Antennae very long and slender (Fig. 3 e, f). Length of second to third antennomere 0.72–0.78 (mean: 0.75), length of third to fourth antennomere 0.53–0.63 (mean: 0.58).

Thorax. Pronotum pale yellow, narrow (Fig. 3 a–c), posterior angles distinct (Fig. 3 a–d), median length to maximum width 0.69–0.74 (mean: 0.72). Elytra ovate and comparatively roughly punctate. Elytra pale yellow in 10 % of material examined (Fig. 3a); others with a slender transverse black band at elytral base that sometimes reaches the basal margin close to the yellow scutellum, from which it is separated by at least half the width of the scutel-

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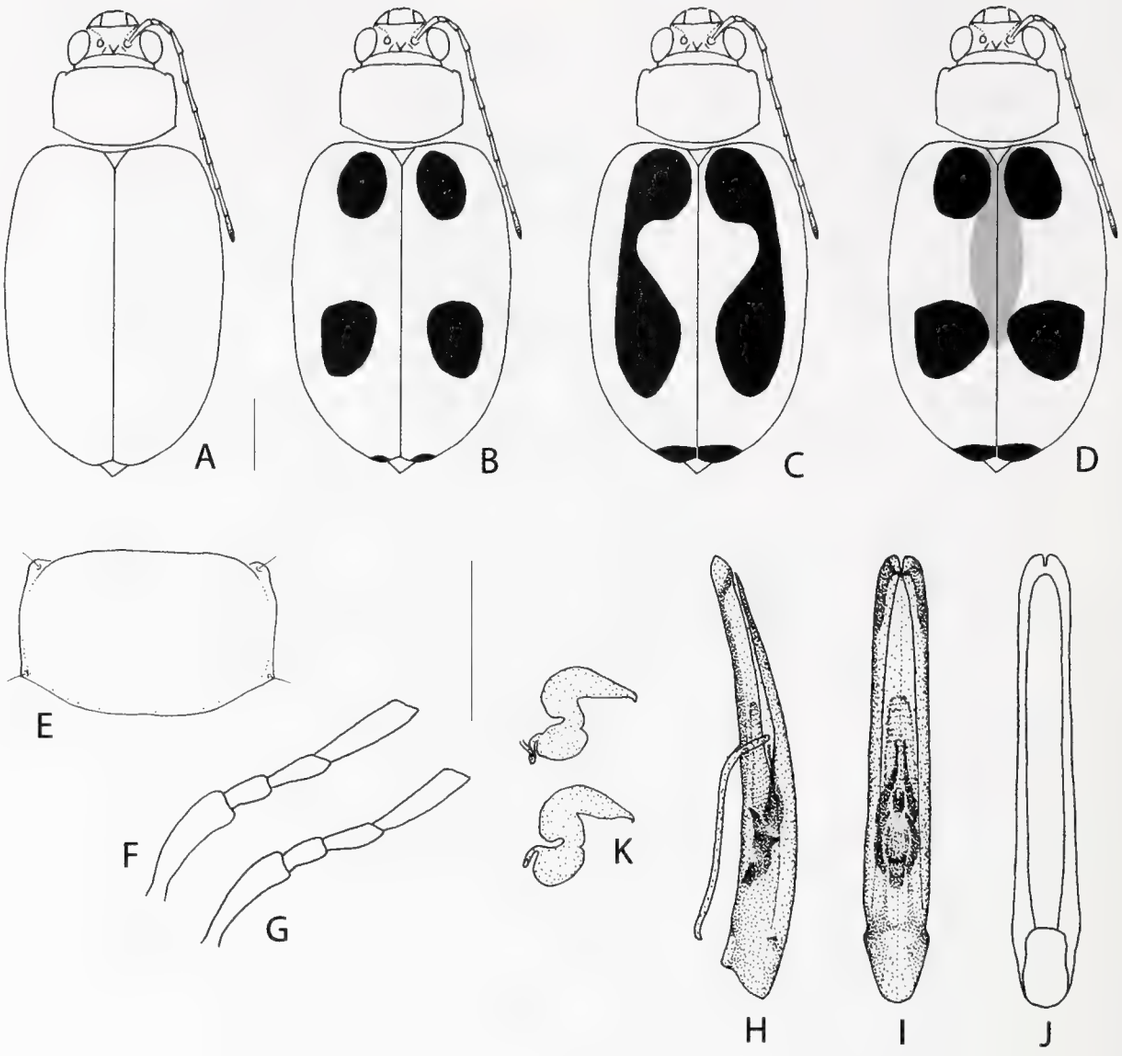

Fig. 4. Morphology of *Monoleptoides advena* (Weise, 1909). **a–d.** Habitus showing typical colour variation. **e.** Pronotum, detail. **f, g.** Basal antennomeres one to four of male (f) and female (g). **h–j.** Median lobe, lateral (h), dorsal (i), and ventral, without endophallic structures (j). **k.** Spermathecae of two different females. Scale bars: 1 mm.

lum (Fig. 3b, c) and one pair of small black spots after the second third (Fig. 3b, c) which are rarely connected, and therefore not forming a homogenous black band. In 10 % of material there is only one spot in the apical third. One specimen from Mozambique (Buzia River), and another from Tanzania (Lukuledi) with a narrow black line on outer eltyral margin and sutural margin. Length of elytron 3.15–4.25 mm (mean 3.74 mm), maximum elytral width 2.20–2.90 mm (mean: 2.59 mm). Width of both elytra to length of elytron 0.64–0.71 (mean: 0.67). Legs pale yellow.

Abdomen. Pale yellow.

Male genitalia. Median lobe dorso-ventrally compressed, widening distinctly basally and in the apical third, pointed and deeply incised at the apex, endophallus usually with three pairs of spiculae of different lengths (Fig. 3g–i).

Female genitalia. Spermatheca with small nodulus, and broad cornu (Fig. 3j).

Diagnosis. *Monoleptoides trivialis* and *M. didyma* have very similar colour patterns and are distributed sympatrically over a wide range. Similar labels indicate that they sometimes occur syntopically (Arabuko Sokoke and Malindi in Kenya; Zanzibar). Although both species are very similar superficially, there are distinct differences in their finer detail. *Monoleptoides trivialis* is larger, the elytra are wider, more ovate and testaceus, the pronotum much narrower (Figs 3d, 10e), and the antennae are longer than in *M. didyma*. Both species can be separated by pronotal index (pronotal length to width in *M. trivialis* 0.70–0.74; *M. didyma* 0.62–0.68), and antennal index (length of second to third antennomere in *M. trivialis* 0.72–0.78, third to fourth antennomere 0.53–0.63; *M. didyma*: second to third antennomere 0.65–0.76, third to fourth antennomere

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0.67–0.77). Body size and shape, shape of pronotum and the antennae of *M. trivialis* are also very similar to *M. thomsoni*, which only occurs sympatrically in south-eastern DRC. The male genitalia of both these species are similar (Figs 3g–i, 7i–n), and together with the larger *M. centromaculata* (Fig. 8a–c) that also has a flat, apically pointed median lobe (Fig. 8g–i), these three species are obviously closely related. *Monoleptoides trivialis* can, however, be distinguished from both the other species by its more slender pronotum (Figs 3d, 7f, 8d).

Distribution. Most specimens examined have been collected in the coastal regions of Kenya, Tanzania and Mozambique, with only a few recorded from the interior of most of these countries and Zimbabwe (Fig. 12).

Type material examined

Monolepta trivialis: Holotype, ♀, "Sinna Peters / 30403 / Monolepta trivialis Gerst." (MNHU; Fig. 20d). Type locality: Mozambique, Sena, 17.45S/34.55E. Holotype by inference, original description indicates "nur ein Exemplar von Sena".
Candezea umbilicata: Holotype, ♀, "Museum Paris, Afrique Orient. Angl. Mombasa, Ch. Alluaud 1904 / Juillet / Coll. R. I. Sc. N. B. / Type / Candezea umbilicata Labois. V. Laboissière – dét. / Muséum Paris Coll. Générale" (MNHN; Fig. 20e). Type locality: Kenya, Mombasa, 4.04S/39.40E. In his short description Laboissière mentioned data for only one specimen, since this is the only one available, it can be treated as the holotype.

Further material examined

Kenya. 1 ♀, Malindi, Gede Forest, 3.18S/40.01E, V.1990, Werner (CMD); 1 ♂, Kilifi distr., Arabuko Sokoke, 3.20S/39.52E, Forest Reserve, IX.–X.1992, L. Bartolozzi et al. (MZSF). – **Mozambique.** 1 ♀, Lour. Marques, 25.58S/32.25E, II.1021, C. B. Hardenberg (MNHU); 1 ♂, "30406, Mozamb. Peters" (MNHU); 1 ♂, Vallée du Pungoue Guengere, 18.45S/33.40E, 1906, G. Vasse (MNHN); 1 ♀, Chibababa, Lower Buzi River, 19.52S/34.45E, XII.1906, C. F. M. Swynnerton (BMNH); 1 ♀, Pomene, 22.59S/35.35E, V.1975, beaten on coastal bush, A. Strydom (TMSA). – **Tanzania.** 1 ♂, Lukuledi, 11.27S/38.47E, Coll. Ertl (MRAC); 1 ♀, Tanga, 5.07S/39.05E, II.1936 (BMNH); 1 ♀, Inter Dar es Salaam et L. Tanganjika (HMNH); 1 ♀, Bagamoya, 6.19S/38.20E, (ZMUH); 1 ♂, Sansibar, 6.10S/39.12E, Hildebrandt, 60586 (MNHU); 1 ♀, mittlerer Rufiyi, Schneider (MNHU); 1 ♀, Parek, 6.17S/39.30E, 1600 m, Sammlung Dr. Chr. Schröder (MNHU); 1 ♂, Morogoro, 6.49S/37.40E, Nachlass Schmitt (NHMW); 1 ♀, Upogoro, 8.19S/34.42E, XI.1912 (MNHU); 3 ♀, 3 ♂, Zansibar, Mhonda Ouzigoua, A. Hacquard Mis. ap. 1879, 1. Trim. 1880, coll. R. Oberthur (1 ex. MNCN, 5 ex., MNHN); 1 ♀, 1 ♂, Mombo, 4.54S/38.18E, VII.1899, ex coll. J. Weise (MNHU); 1 ex. "didyma co-typ Gerst." (MNHU); 1 ♀, Mtanza, 7.51S/38.25E, V.1910, Holtz (MNHU); 2 ♀, D. Ostafrika, Litema-Gebirge, 3.24S/37.37E, Böttcher (MNHU); 1 ♀, Pangani Falls Forest, 5.20S/38.40E, I.–III.1993, Frontier-Tanzania (ZMUC). – **Zimbabwe.** 1 ♀, Matabele, 20.05S/30.57E, Hard af Seg. (NHRS).

***Monoleptoides advena* (Weise, 1909)**, comb. nov.
Monolepta advena Weise, 1909: 210.
Monolepta keniensis Bryant, 1953: 866; syn. nov.

Total length. 5.00–6.70 mm (mean: 5.73; n = 12).

Head. Pale yellow, mouth parts pale yellow to yellow. Antennae pale yellow, usually only tip of terminal antennomere black (Fig. 4a–d); comparatively short, length of second to third antennomere 0.77–0.83 (mean: 0.80), and length of third to fourth 0.55–0.60 (mean: 0.58; Fig. 4f, g).

Thorax. Pronotum pale yellow to yellow, distinctly transverse, median length to maximal width 0.57–0.66 (mean: 0.61; Fig. 4e), comparatively flat with an indistinct median transverse depression. Elytra completely yellow to pale brownish-yellow in half the material examined (Fig. 4a), but bright citric yellow in live specimens. Some specimens with large black spots close to the scutellum and at the beginning of the terminal third (Fig. 4b). In 10 % of the material examined, e. g. some type specimens of *M. advena*, these spots can be confluent forming an irregular longitudinal band (Fig. 4c). Specimens with isolated black spots with brownish-red stripe along the basal two thirds of the suture (Fig. 4d) make up 20 % of all specimens examined, e. g. the type specimens of *M. keniensis*. Colouration in specimens with spots always includes black elytral tips (Fig. 4b–d), a few yellow specimens have only these small black elytral tips. Elytra ovate, dorso-ventrally compressed, shallowly punctuated, length of elytron 3.85–5.40 mm (mean 4.31), maximum elytral width 2.60–3.50 mm (mean: 2.98), maximal width of both elytra to length of elytron 0.63–0.71 (mean: 0.67). Legs pale yellow.

Abdomen. Pale yellow to yellow.

Male genitalia. Median lobe parallel-sided in dorsal view, blunt apically and not deeply incised, gently curved in lateral view (Fig. 4h). One pair of long endophallic spiculae (Fig. 4i, j).

Female genitalia. Spermatheca with small nodulus, and very broad cornu with short tip (Fig. 4k).

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Diagnosis. On average a large species with a distinctly transverse pronotum that can most easily be confused with *M. duplicata* which occurs sympatrically at least in Kenya, except for the coastal areas. *Monoleptoides advena* has, on average, a more slender pronotum (pronotal length to width: 0.57–0.66; *M. duplicata*: 0.63–0.68). Specimens with dorsal colour patterns (Fig. 4b–d) can easily be identified. In entirely yellow specimens only dissection of the male genitalia allows reliable species determination; *M. advena* has a comparatively broad, parallel-sided median lobe (Fig. 4h-j), while that of *M. duplicata* is narrower, and narrows, at least slightly, sub apically (Fig. 2i-n).

Distribution. Restricted to montane areas in northern Tanzania (Kilimandjaro, West-, and East Usambara) and Kenya (Mau Escarpment, Nairobi, Taita Hills; Fig. 13).

Type material

Monolepta advena: Lectotype, ♂, "Kilimandjaro / Type / Monolepta advena m / ex coll. J. Weise" (MNHU; Fig. 20h). Type locality: Tanzania, Klimandjaro, 3.09S/36.51E. – Paralectotypes: 1 ♀, "Kilimandjaro, Sjöstedt, 1905-6 / Kibonoto Kulturz. / 99730 / aug. / ex coll. J. Weise / Type / Monolepta advena cotype m" (MNHU); 1 ♀, "Kilimandjaro, Sjöstedt, VIII.1905-6 / Kibonoto Kulturz. / aug. / ex coll. J. Weise (MNHU); 1 ♂, "Kilimandj., Sjöstedt / Kibonoto Kulturz. / male / advena m / aug. / Typus" (NHRS); 1 ♀, "Kilimandj., Sjöstedt / Kibonoto Kulturz. / 20. april" (NHRS). Weise mentioned each of the four females and males, which are syntypes and a lectotype has been designated to fix the name on a single specimen.
Monolepta keniensis: Holotype, ♀, "Type / Kabarnet, Dist. Baringo, I-1944, Museum staff." (BMNH; Fig. 20i). Holotype by original designation. Type locality: Kenya, Rift Valley, Lake Baringo, 1.17S/36.50E. – Paratypes: 1 ♀, Nairobi, 1.17S/38.18E, 18.X.1920, A. F. J. Gedye (BMNH); 2 ♀, "Bura, Teita, 5000 ft, II.1939" (BMNH). Bryant mentioned five paratypes from Teita, only two of them are available in the BMNH; the specimen with the same locality data in NMK is not a type specimen.

Further material examined

Kenya. 1 ♂, 1 ♀, Bura, Teita, 3.30S/38.18E, II.1939 (NMK); 1 ♀, 1 ♂, Taita Hills, Wundanyi, IV.1997, M. Snizek (MIZT); 1 ♂, Taita Hills, Mbolo Forest, 3.20S/38.29E, III.1998, ICIPE (NMK); 1 ♂, Taita Hills, near Wundanyi, 1680 m, 3.21S/38.17E, Th. Wagner (ZFMK). – **Tanzania.** 1 ♀, Kilimandscharo, Chr. Schröder (MNHU); 1 ♂, Usambara, 1893 (BMNH); 1 ♂, Mombo, 4.54S/38.18E, Paul, ex coll. J. Weise (MNHU); 1 ♂, Mombo, Paul „testacea ? m / Typus" (NHRS); 2 ♀, 1 ♂, Mombo, VII.1899 (MNHU).

***Monoleptoides horni* (Laboissière, 1931)**, comb. nov.
Candezea horni Laboissière, 1931: 32.

Total length. 5.45–6.80 mm (mean: 6.12 mm; n = 8).

Head. Pale yellow, including labrum and palpi. Antenna very characteristic with fourth to eighth antennomeres black in contrast with the other basal and apical antennomeres (Fig. 5a). Length of second to third antennomere 0.75–0.86 (mean: 0.82), length of third to fourth antennomere 0.47–0.56 (mean: 0.51; Fig. 5c, d).

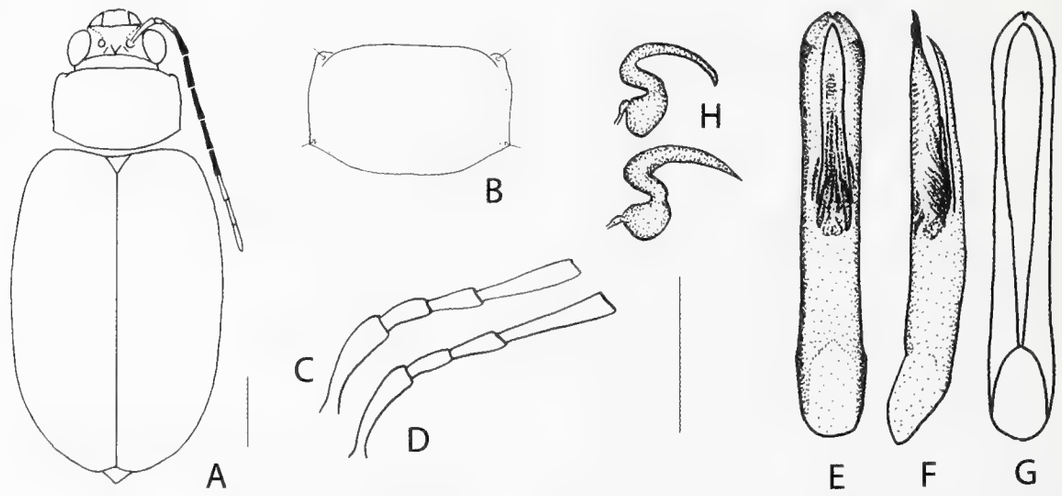

Fig. 5. Morphology of *Monoleptoides horni* (Laboissière, 1931). **a.** Habitus showing typical colour variation. **b.** Pronotum, detail. **c, d.** Basal antennomeres one to four of male (c) and female (d). **e–g.** Median lobe, lateral (e), dorsal (f), and ventral, without endophallic structures (g). **h.** Spermathecae of two different females. Scale bars: 1 mm.

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Thorax. Pronotum pale yellow, distinctly transverse, median length to maximum width 0.62–0.66 (mean: 0.64). Pronotum with indistinct, medially interrupted transverse depression (Fig. 5b). Elytra ovate to sub parallel, length of elytron 4.20–5.00 mm (mean 4.58), maximum elytral width 2.55–3.20 mm (mean: 2.84); maximum width of both elytra to length of elytron 0.58–0.66 (mean: 0.62). Elytra entirely yellow to pale reddish-yellow (Fig. 5a). Scutellum yellow. Legs pale yellow.

Abdomen. Abdominal segments and pygidium yellow.

Male genitalia. Median lobe comparatively short, parallel-sided, straight in lateral view (Fig. 5f), apical incision short and indistinct (Fig. 5e, g); ventral groove broad in the apical half (Fig. 5g). Endophallus with many very slender spiculae (Fig. 5a, b), tectum slender and sharply pointed.

Female genitalia. Spermatheca with large nodulus, cornu very slender and straight, or at least curved apically (Fig. 5h).

Diagnosis. A comparatively large species with an entirely pale dorsum. Most similar to the entirely yellow specimens of the sympatric species *M. duplicata* and *M. thomsoni*, but *M. horni* can easily be distinguished by antennomeres four to eight, which are black (Fig. 5a), and in any doubtful cases by the genitalia of both sexes (Fig. 5e–h). *Dyolania oculata* (Jacoby, 1903) is also similar to *M. horni*. Both species share the peculiar antennal colouration, and occur sympatrically in Equatorial Guinea (including Bioko) and Cameroon (Bauer & Wagner 2010), but *D. oculata* has an entirely reddish-yellow dorsum and much narrower pronotum and elytra. Distinct differences in the shape and structure of the genitalia of both species underline the genetic differentiation between these two species.

Distribution. Restricted to a very small area in Equatorial-Guinea, Gabon, Togo and Cameroon (Fig. 14).

Type material

Lectotype: ♀, "Joko Kamerun / ex. coll. Laboissière. Coll. R. I. Sc. N. B. / Candezea horni m. V. Laboissière – Dét. 1931 / Holotype" (IRSN; Fig. 20k). Laboissière mentioned at least four specimens in his original description. A lectotype is here designated to fix the name on a single specimen. Type locality: Cameroon, Joko, 5.29N/12.19E. – Paralectotype: 1 ♀, Togo, Conradt, ex. coll. Kraatz (DEIS).

Further material examined

Cameroon. 1 ex., Joko, 5.29N/12.19E (ZMUH); 1 ex., Yaunde, 3.51N/11.31E, V.1897, v. Carnap (MNHU); 1 ex., Yaunde, III.1895, Zenker (MNHU); 1 ex., N'Kongsamba, 4.49N/9.53E, VII.1957, J. Cantaloube (MNHN). – **Equatorial Guinea.** 2 ex., Fernando Poo, 3.30N/8.42E, V.1900, L. Conradt (MNHU); 1 ex., Fernando Poo, Sta. Isabel, 3.45N/8.42E, VII.1900, L. Conradt (MNHU); 1 ex., Valle del Mvulu, Nniefang, L. Báguena (MNCN); 3 ex., Fernando Poo, Basupu, VI.1919, Escalera (MNCN); 1 ex., Fernando Poo, Sta. Isabel, VI.1919, Escalera (MNCN). – **Gabon.** 2 ex., Nsessé par Loango, 1.35S/10.00E, coll. E. Cordier (IRSN).

***Monoleptoides mertensi* (Laboissière, 1940),**
comb. nov.
Candezea mertensi Laboissière, 1940b: 12.

Total length. 5.00–7.20 mm (mean: 6.36 mm; n = 15).

Head. Pale yellow, including labrum and palpi. Antenna either entirely pale yellow (Fig. 6b), or terminal antennomere brown to blackish (Fig. 6a), or rarely up to five sub terminal antennomeres brown (Fig. 6c). Length of second to third antennomere 0.53–0.66 (mean: 0.60), length of third to fourth antennomere 0.54–0.66 (mean: 0.61; Fig. 6e, f).

Thorax. Pronotum pale yellow, distinctly transverse, median length to maximum width 0.58–0.68 (mean: 0.62). Pronotum with distinct, medially interrupted transverse depression (Fig. 6d). Elytra ovate, length of elytron 4.20–5.80 mm (mean 4.89), maximum elytral width 2.95–4.30 mm (mean: 3.55); maximum width of both elytra to length of elytron 0.68–0.76 (mean: 0.73). Elytra in about 70 % of specimens with a black humeral spot, a disrupted transverse black band beyond the middle, and black elytral tips (Fig. 6b); 10 % with the black elytral colouration more robust (Fig. 6c); 10 % with the humeral spots and elytral apex brownish-red and the transverse band reduced to a small spot just below the middle (Fig. 6a); or rarely with two spots on each elytron; elytra with brownish-red base and tip only (i. e. without black dorsal pattern) and very rarely yellow in the remaining material examined. Scutellum yellow. Legs pale yellow.

Abdomen. Abdominal segments and pygidium yellow.

Male genitalia. Median lobe slender, ovate in cross-section, apical part curved ventrally (Fig. 6g), widening

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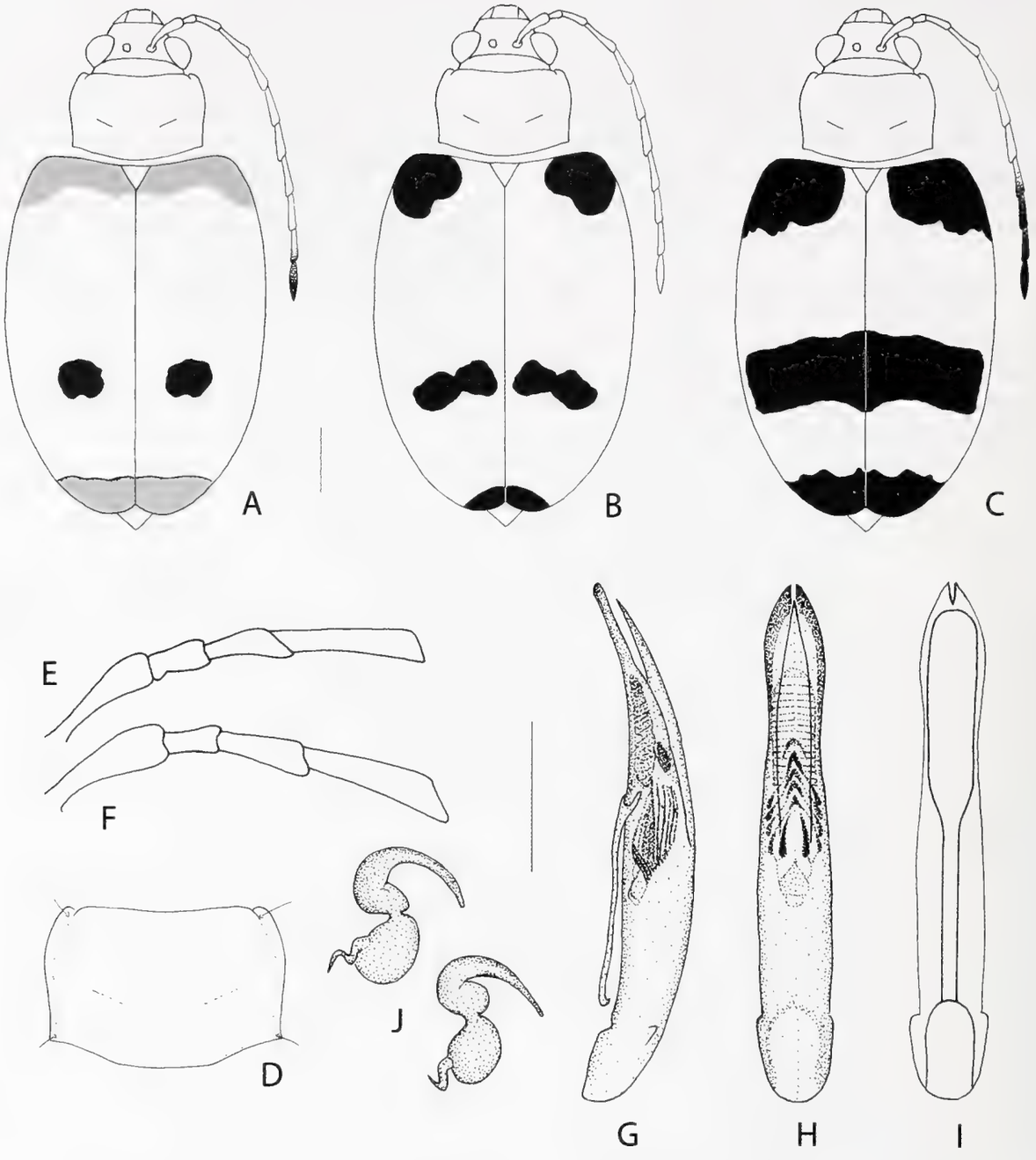

Fig. 6. Morphology of *Monoleptoides mertensi* (Laboissière, 1940). **a–c.** Habitus showing typical colour variation. **d.** Pronotum, detail. **e, f.** Basal antennomeres one to four of male (e) and female (f). **g–i.** Median lobe, lateral (g), dorsal (h), and ventral, without endophallic structures (i). **j.** Spermathecae of two different females. Scale bars: 1 mm.

slightly near the apex (Fig. 6h, i); ventral groove very broad in the apical half (Fig. 6i). Endophallus with many very slender and one pair of shorter, more robust spiculae (Fig. 6g, h), tectum slender and very pointed.

Female genitalia. Spermatheca with large, nearly spherical nodulus, and slender, distinctly curved cornu (Fig. 6j).

Diagnosis. The largest species in the genus and distinguishable from most others purely by size and the broadly laterally rounded elytra. Also, elytra with three transverse bands (Fig. 6c) do not occur in any other species of *Monoleptoides*, with the exception of a few specimens of *M. sulcata*, which has a red pronotum with black discal spots (Fig. 9b); or similar to elytral spots of few *M. advena* (Fig. 4b, d) where the black colour does not extend onto the lateral parts of the humeri, and which occurs allopatrically. Specimens with a brownish-red elytral base and tip (Fig. 6a) are only found in this species, and very rarely in the much smaller *M. thomsoni*. Only in some en-

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tirely yellow specimens is dissection of the genitalia necessary, where M. mertensi show distinct patterns in both sexes (Fig. 6g–j).

Distribution. Restricted to Guineo-Congolian forests in Central Africa, and most abundant in the Congo basin (Fig. 15).

Type material

Holotype: ♀, "Type / Congo-belge: Kwango Ngowa XIII–1937 R. P. J. Mertens / R. Mus. Hist. Nat. Belg. I.G. 11.648 / cf. Bull. Mus. Hist. Nat. Belg. XVI, n° 25, 1940 p. 11-22 / V. Laboissière rev., 1940: Candezea Mertensi m. Type / Holotypus" (IRSN ; Fig. 20l). Holotype by original designation. Type locality: Congo (Zaire), Kwango, 5.70S/16.58E.
Paratypes: 22 ex., same locality as holotype (IRSN).

Further material examined

Cameroon. 1 ex., Mt. Balmayo, 3.13N/11.30E, leg. Barga, coll. Breuning (MRAC); 1 ex., Batouri District, 3.75N/13.75E, V.–VI.1935, F. G. Merfield (BMNH); 1 ex., Nkongsamba, Mt. N´Lonako, 4.59N/9.53E, 1800 m, 5.00N/9.88E, 1939, P. Lepisme, R. Paulian, A. Villiers (MNHN); 2 ex., Bitye fa river, 3000 f., 3.02N/12.37E, 1952, ex. coll. Oberthur (MNHN); 5 ex., Nkongsamba, 5.00N/9.52E, I.–VI.1957, J. Cataloube (MNHN); 1 ex., Nkolbisson, Dept. Nyong et Sanaga, 3.42N/11.00E, X.1963, L. G. Saegers (MRAC); 1 ex., Meyo, XII.1968, B. de Miré (MNHN); 1 ex., Essazok, Test Kakao, 3.68N/11.53E, XI.1969, B. de Miré (MNHN). – **Central Africa.** 1 ex., I.1957, Rafaii Hr. Oubanghi, Le Moult vend. via Reinbek (ZMUH). – **Congo (Republic).** 1 ex., Brazzaville, Mission Chari-Tchad, 4.27S/15.28E, 1904, D. J. Decorse (MNHN); 2 Ex., Env. de Brazzaville, 4.27S/15.28E, 1907, E. Roubaud & A. Weiss (MNHN); 1 ex., Odzala Nat.-Park, 0.38N/14.83E, I.–III.1997, S. Murzin & V. Siniaev (CLM). – **Congo (Zaire).** 1 ex., Kongo (DEIS); 1 ex. Kongo (IRSN); 1 ex., Congo, Dannfelt (NHRS); 1 ex., Kassongo à Stanleyfalls, 0.50N/25.20E, Rom. (IRSN); 1 ex., Uélé, Kasai, 2.58N/24.15E, L. Achten (MRAC); 1 ex., Kibali-Ituri, Ukaika, 0.45N/28.45E, XII.1910, Grauer (NHMW); 1 ex., Tshuapa, Itoka, 0.17S/23.08E, X.1912, R. Mayné (MRAC); 1 ex., Ubangi, Yambata, 2.43N/21.57E, XII.1912, R. Mayné (MRAC); 1 ex., Lac Leopold II, Tolo, 2.55S/18.58E, XII.1913, Dr. J. Maes (MRAC); 1 ex., Tshuapa, Ikenge 0.10S/18.44E, IV.1914, R. Mayné (MRAC); 3 ex., Lac Leopold II, Bumbuli, 3.40S/20.52E, IV.1915, R. Mayné (MRAC); 1 ex., entre Moyen Congo, Léopoldville et Stanleyville, 2.40S/20.25E, 1918, L. Burgeon (MNHN); 1 ex., Kivu, Kashewe, 1.56S/28.50E, 1920, coll. C. Babault (MNHN); 2 ex., Uélé, Moto, 2.45N/26.42E, 1920, L. Burgeon (MRAC); 1 ex., Haut-Uelé, Watsa à Niangara, 3.05N/29.53E, VII.1920, L. Burgeon (MRAC); 2 ex., Stanleyville, 0.50N/25.20E, VII.1920 (IRSN); 1 ex., Tshuapa, Bikoro, 0.45N/18.12E, III.1921, Dr. H. Schouteden (MRAC); 1 ex., Kasai, Bashishombe, 4.38S/21.05E, VIII.1921, J. Ghesquière (MRAC); 1 ex., Kwango (Kasai), Ipamu, 4.12S/19.41E, 1922, P. Vanderijst (MRAC); 1 ex., Mayumbe, Seke-Banza; 5.33S/13.27E, II.1924, A. Collart (MRAC); 1 ex., Kwango, Kimbou, 4.15S/17.08E, 1925, P. Vanderijst (MRAC); 7 ex., Kasai, Sankuru, 4.28S/20.42E, II.1925, J. Ghesquière (MRAC); 1 ex., Sankuru, Lomela, 2.30S/23.28E, IV.1925, J. Ghesquière (MRAC); 1 ex., Sankuru Fôret de Lankala, Sankuru (Riv.), 4.28S/20.42E, IV.1925, J. Ghesquière (MRAC); 1 ex., Stanleyville, Barumbu, 1.23N/23.52E, VII.1925, J. Ghesquière (MRAC); 1 ex., Stanleyville, 0.50N/25.20E, X.1925, J. Ghesquière (MRAC); 3 ex., Equateur, Tshuapa, Bokote, 0.08S/20.13E, 1926, R. P. Hulstaert (MRAC); 1 ex., Uélé, Tibo, 3.28N/27.58E, IV.1926, A. Collart (IRSN); 1 ex., Stanleyville, 0.50N/25.20E, V.1926, Dr. H. Schouteden (MRAC); 6 ex., Equateur (Tshuapa), Flandria, 0.33S/19.10E, IV.1928, R. P. Hulstaert (MRAC); 12 ex., Stanleyville, 0.50N/25.20E, VIII.1928, VI.1929, XI., XII.1929, A. Collart (IRSN); 9 ex., Ituri, Lubutu, 0.42S/26.58E, IX., X.1929, A. Collart (8 ex. IRSN, 1 ex. MRAC); 1 ex., Masisi de Manlimba á Uluku, IX.1929, A. Collart (IRSN); 6 ex., Sankuru, Komi, 3.48S/23.15E, I.–IV.1930, J. Ghesquière (MRAC); 1 ex., Bas Congo, Mangembo, 4.40S/14.27E, 1932, Dr. Zwolakowski (MRAC); 1 ex., Ubangi, Solweo, 0.50S/17.45E, II.1932, Brédo (MRAC); 1 ex., Lulua, Kapanga, 8.35S/22.58E, X.1932, F. G. Overlaet (MRAC); 3 ex., Tshuapa, Eala, 0.07N/18.28E, VII.–VIII.1933, A. Corbisier (MRAC); 1 ex., Uélé, Bambesa, 3.47N/25.42E, X.1933, J. V. Leroy (MRAC); 1 ex., Uélé, Dingila, 3.38N/26.07E, XI.1933, J. V. Leroy (MRAC); 79 ex., Tshuapa, Eala, 0.07N/18.28E, 1935, I.–XI.1936, J. Ghesquière (MRAC); 1 ex., Tshuapa, Eala, 0.07N/18.28E, IV.1936, P. Henrard (MRAC); 1 ex., Maniema, Kima, 6.03S/24.48E, 1937, E. Milliau (MRAC); 1 ex., Prov. Tshuapa, Lukolela, 1.05S/17.20E, 1937, R. Massart (IRSN); 5 ex., Uélé, Bambesa, 3.47N/25.41E, III/V/IX.1937, J. Vrydagh (1 ex. IRSN, 4 ex. MRAC); 1 ex., Rutshuru, 1.18S/29.45E, IV.1937, J. Ghesquière (MRAC); 1 ex., Ubangi, Gemena, 3.25N/19.46E, I.1938, G. Léontovich (MRAC); 1 ex., Kwango, Ngowa; 5.39S/16.28E, II.1938, R. P. J. Mertens (IRSN); 1 ex., Uélé, Bambesa, 3.28N/25.41E, V.1938, P. Henrard (MRAC); 2 ex., Kwango, Ngowa; 5.42S/16.34E, XII.1938, VI.1939, R. P. J. Mertens (IRSN); 2 ex., Bas Congo, Mayidi, 5.18S/15.15E, 1945, Rév. P. van Eyen (MRAC); 4 ex., Kivu, Kitwambalezi, 2.52S/28.58E, 1946, L. Herrinck (MRAC); 2 ex., Stanleyville, Basoko, 1.23N/23.40E, V.1949, P. L. G. Benoit (MRAC); 20 ex., Stanleyville, Yangambi, 0.43N/24.22E, X.1951, III.1952, II, III, VIII.1953, V.1954, X, XI.1959, J. Decelle (MRAC);

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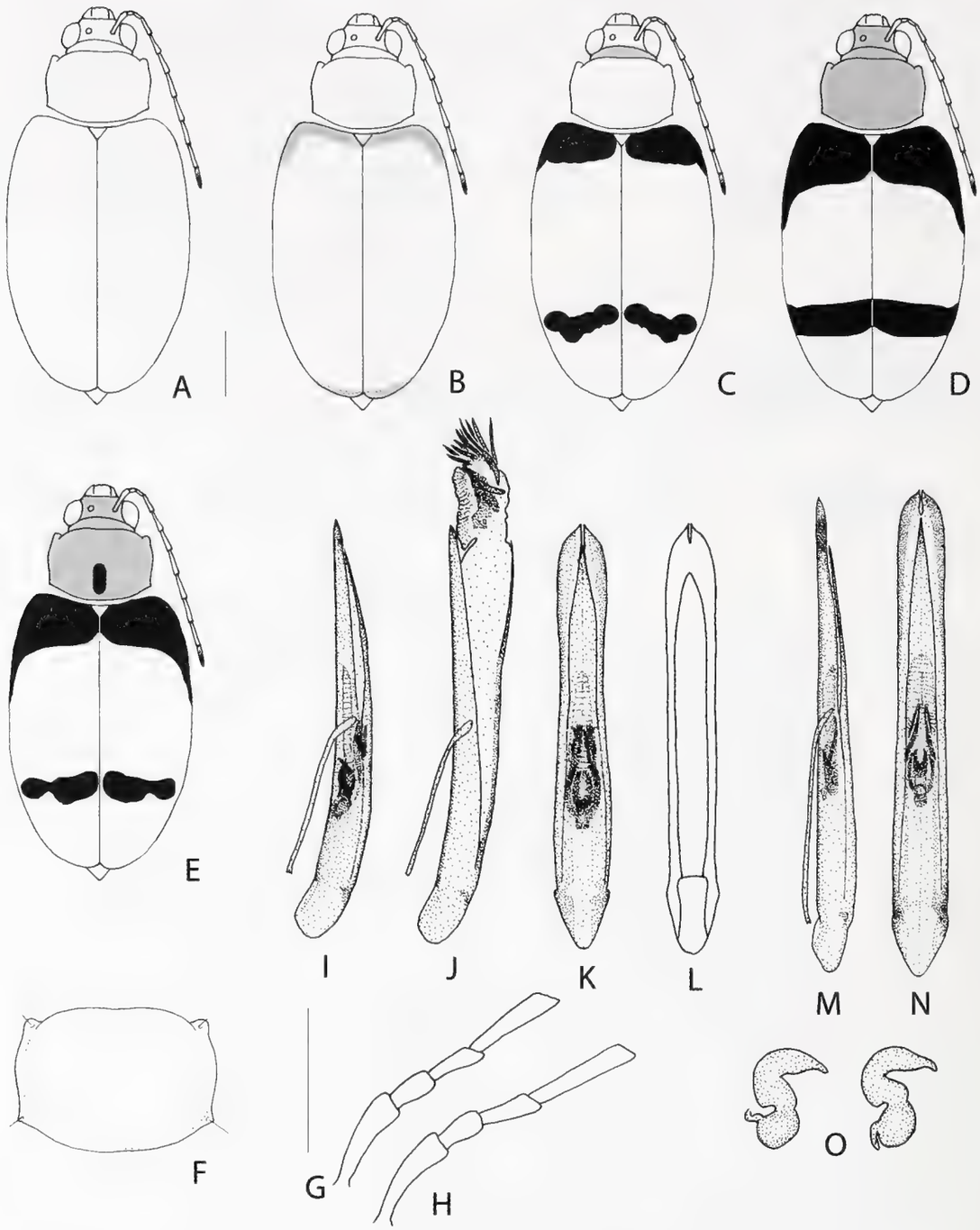

Fig. 7. Morphology of *Monoleptoides thomsoni* (Allard, 1888). **a–e.** Habitus showing typical colour variation. **f.** Pronotum, detail. **g, h.** Basal antennomeres one to four of male (g) and female (h). **i–l.** Median lobe of a typical specimen, lateral (i), lateral with everted endophallus (j), dorsal (k), and ventral, without endophallic structures (l). **m, n.** Median lobe of a large specimen, lateral (m), dorsal (n). **o.** Spermathecae of two different females. Scale bars: 1 mm.

3 ex., Stanleyville, Yangambi, 1952, C. Donis/ R. Mayné (MRAC); 1 ex., Stanleyville, Ongoka, 1.38S/26.03E, IV/IX.1952, J. Patos (MRAC); 7 ex., Equateur (Tshuapa), Bokuma, 0.10S/18.42E, XII.1951, VII.1952, Rév. P. Lootsen (MRAC); 1 ex., Maniema, Kisamba, 4.10S/26.50E, IX.1954, Dr. J. Claessens (MRAC); 1 ex., Tshuapa, Ikela, 1.18S/23.27E, 1955, R. Deguide (MRAC); 9 ex., Tshuapa, Ikela, 1955, XI.1956, Rév. P. Loosen (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Tête de source, riv. Indray, affl. Semliki, 1840 m, 0.49N/30.07E, XI.1956, P. Vanschuytbroeck (IRSN); 1 ex., P. N. A., secteur nord, Tungula, affl. dr. Semliki, 0.48N/30.04E, I.1957, P. Vanschuytbroeck (IRSN); 1 ex., P. N. A., secteur nord, Kilia, village chef Kaparata, 1000 m, 0.47N/25.17E, I.1957, P. Vanschuytbroeck (IRSN); 1 ex., Stanleyville, Yangambi, 0.47N/24.47E, XII.1958, P. Dessert (MRAC); 3 ex., Yan-

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gambi, XI.1959, P. Dessart (IRSN); 2 ex., Maniema, Kasongo, Riv. Lomami, 4.45S/26.41E, II/III.1960, P. L. G. Benoit (MRAC); 1 ex., Kivu, Fôret de Kasuo, 0.23S/29.02E, XII.1966, R. P. Celis (MRAC); 3 ex., Zaire, Tshuapa, Etata, 0.23S/20.44E, VII.–X.1969, V.1970, J. Hauwaerts (MRAC); 1 ex., Mayumbe, Kilengi, 5.22S/13.38E, V.1970, P. M. Elsen (MRAC); 2 ex., Kisangani, 0.50N/25.20E, VII.1971, J Traveniers (MRAC); 10 ex., Djoumouna (stream), galerie fôrestière, 4.38S/15.16E, I.1973, Cornic (MNHN); 3 ex., Makoua, 0.01N/15.38E, II.1973, C. Morin (MNHN); 1 ex., Bandeko, 1.54N/17.35E, XI.973, C. Morin (MNHN); 1 ex., Djoumouna (stream), 4.38S/15.16E, III.1975, C. Morin (MNHN); 1 ex., Mossenbjo, III.1976, G. Onore (MNHN); 1 ex., Tshuapa, Eala, 0.07N/18.28E, VII.1980, R. Kiss (IRSN); 2 ex., 1993, Thollon (MNHN). – **Equatorial Guinea.** 1 ex., Fernando Poo, Basile, 3.45N/8.51E, IX.1901, L. Fea (MCGD); 1 ex., Is Fernando Poo, Musola, 3.33N/8.37E, I.1902, L. Fea (MCGD); 1 ex., Nkolentangan, 1.31N/9.51E, VI.1907–V.1908, G. Tessmann (MNHU).

***Monoleptoides thomsoni* (Allard, 1888)**, comb. nov.
Monolepta thomsoni Allard, 1888: 286.

Total length. 4.40–6.00 mm (mean: 5.19 mm; n = 35).

Head. Pale yellow to yellow (Fig. 7a, b), or reddish-yellow (Fig. 7d, e), frons usually paler than vertex (Fig. 7c), labrum, palpi and antenna pale yellow to yellow, usually only terminal antennomere with black tip (Fig. 7a–e). Antenna comparatively short, antennomeres slender; length of second to third antennomere 0.64–0.88 (mean: 0.75), particularly in males with short third antennomeres (Fig. 7g, h), length of third to fourth antennomere 0.56–0.72 (mean: 0.63).

Thorax. Pronotum yellow to reddish-yellow (Fig. 7a–d), only four specimens known with a small, medial, black pronotal spot near the basal margin in posterior third (Fig. 7e), distinctly convex dorsally (Fig. 7f). Pronotum slender, median length to maximum width 0.66–0.74 (mean: 0.70). Elytra completely yellow in about 10 % of material examined (Fig. 7a), few specimens (as the type) with reddish-brown elytral base and apical tip (Fig. 7b), but more than 80 % with black transverse elytra bands (Fig. 7c–e). All four specimens from Zimbabwe with narrow black elytral outer margins and suture. Elytra slender, length of elytron 3.45–4.20 mm (mean 3.91 mm), maximum elytral width 2.40–3.00 mm (mean: 2.70 mm). Width of both elytra to length of elytron 0.64–0.74 (mean: 0.68). Scutellum yellow. Legs pale yellow to yellow.

Abdomen. Pale yellow to yellowish-red.

Male genitalia. Median lobe narrow, parallel-sided, very long and compressed, widening slightly apically (Fig. 7k), but sometimes indistinct (Fig. 7n), apex pointed with deep median incision. Endophallic spiculae slender, short (Fig. 7i–n).

Female genitalia. Spermatheca with small nodulus, and very broad cornu with short tip (Fig. 7o).

Diagnosis. The external characters and distribution of *M. duplicata* are very similar to this species. *Monoleptoides thomsoni* is, however, more frequent in West Africa, while it is very rare east of the Central African Rift Valley. Both species cannot be definitively distinguished without doubt by external characters, despite *M. thomsoni* having on average a more slender pronotum and elytra (pronotal length to width: 0.66–0.74; *M. duplicata*: 0.63–0.68; width of both elytra to length of elytron: 0.64–0.74; *M. duplicata*: 0.68–0.77).

Only the shape of the median lobe allows a clear differentiation of these two species (Figs 2i–n, 7i–n). Two other species show similarity, namely *M. trivialis* and *M. centromaculata*, but they mainly occur allopatrically and can be differentiated by the shape of the pronotum and/or male genital pattern (Figs 3d, g–i, 8d, g–i).

Distribution and geographical variation. Most specimens are known from humid savannah and tropical forest zones from Sierra Leone to Cameroon in West Africa, and to a lesser extent, from the Congo basin. A few specimens with peculiar colouration (narrow black outer elytral margins and suture) have been collected in Zambia and Zimbabwe along the south-eastern border of the distribution range. This species seems to be restricted to the Guineo-Congolian forest area and does not occur further eastwards than the easternmost distribution of this vegetation type in western Kenya (Kakamega Forest).

There is little geographical colour variation. All the specimens from Sierra Leone have a red or reddish head and pronotum (Fig. 7d), while black markings in the dorsal colouration constantly decrease in size moving in the direction of the Congo basin. Here specimens with a yellow pronotum and small elytral bands (Fig. 7c) are more abundant. There are only six (of seven) specimens collected from savannahs in the Garamba National Park which are entirely yellow, whilst the sympatric *M. duplicata* all have black bands. This might be an effect of character displacement. Specimens with the same colouration as the type specimen (Figs 7b, 20g) occur mainly in Nigeria (Fig. 16).

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Type material examined

Holotype, 1 ♀, "Thomsoni typus / Monolepta thomsonii Muss. Calabar / Monolepta thomsoni (Mur) All. V. Calabar / Ex Musaeo 1899 Coll. R. Oberthür Coll. G. Allard / Muséum Paris 1952 / Holotypus / Mus. Calabar; Mus. E. Allard 1899" (MNHN). Allard gave no data on the material he studied in his short description, but since there is only one specimen in his collection in MNHN indicating a type status, this can be treated as holotype by inference. Type locality: Nigeria, Old Calabar, 4.56N/8.22E.

Further material examined

Benin. 2 ♂, Dahomey, Zaguanado, 6.23N/2.14E, coll. Clavareau (MRAC); 4 ♀, 4 ♂, Benin, Agoué, 6.13N/1.40E, 1879, Abbé Ménager (MNHN); 1 ♀, Dahomey, 1903, E. Poisson (MNHN). – **Cameroon.** 3 ♀, Joko, 5.29N/12.19E (1 ex. BMNH, 2 ex. MRAC); 1 ♀, Duala, 4.10N/9.37E, v. Rothkirch, coll. Clavareau (MRAC); 1 ♂, Kamerun, Tibati, 6.28N/12.38E, II., L. Colin (MNHU); 1 ♂, N'Kongsamba, 4.59N/9.53E, J. Cantaloube (MNHN); 1 ♀, 1 ♂, Bassam, 2.05N/13.20E, 1897, Le Moult vend, via Reinbek (ZMUH); 1 ♀, Duala, IX.1912, v. Rothkirch (MNHU); 1 ♂, Batouri distr., 3.45N/13.45 E, 750 m, VI.1925, F. G. Meerfield coll. (BMNH); 1 ♂, Doula, 1939, P. Lepesme, R. Paulian & A. Villiers (MNHN). – **Central African Republic.** 1 ♀, Bosum, 6.19N/16.38E, VI.1914, Tessmann (MNHU). – **Congo (Zaire).** 1 ♀, Congo, Dannfelt (NHRS); 1 ♀, 150–200 miles W. of Kambove, 1200–1500 m, IX.1904, Neave coll. (BMNH); 1 ♂, Beni Urwald, 0.30N/29.28E, II.1898, Exp. Herzog Adolf zu Mecklenburg, ex coll. J. Weise (MNHU); 1 ♂, Mobwasa, 2.39N/23.03E, XI.1912, R. Mayné (MRAC); 1 ♀, Kasai, Lulua, 5.54N/22.35E, 1921, L. Achten (MRAC); 1 ♂, Bambuli, 1.48N/30.14E, IV.1915, R. Mayné (MRAC); 1 ♀, Kibenga-Baraka, 4.07S/29.06E, VII.1918, R. Mayné (MRAC); 1 ♂, Basongo, 4.20S/20.24E, VII.1921, H. Schouteden (MRAC); 1 ♀, Leopoldville, 4.18S/15.18E, XII.1925, R. P. Hulstaert (MRAC); 1 ♀, Boyanga, 2.16N/21.45E, XI.1927, A. Collart (IRSN); 2 ♀, alto Uelle, Yakuluku, 4.20N/28.48E, IV.1927, F. S. Patrizi (MCGD); 1 ♀, Leverville, 4.50S/18.44E, 1928, J. Tinant (MRAC); 1 ♀, 1 ♂, Kutu, Distr. Bangala, 1.36N/10.09E, VI.1936, G. Settembrino (IRSN); 1 ♂, Ubangi, Budjala, 2.39N/19.42E, II.1937, Leontovitch (MRAC); 1 ♀, 1 ♂, Bambesa, 3.28N/25.43E, 1938, J. Vrydagh (IRSN, MRAC); 2 ♀, Yangambi, 0.47N/24.28E, km 5, II.1939, M. Brouwers, coll. Basilewsky (MRAC); 1 ♀, Kibali-Ituri, Kingwa, II.1940, A. Lepersonne (MRAC); 1 ♀, Bas Congo, Mayidi, 5.18S/15.15E, 1945, Rév. P. van Eyen (MRAC); 1 ♀, Terr. de Dibaya, Kamponde, 6.45S/22.56E, 1945, Fr. Allaer (MRAC); 1 ♀, Libenge, 3.39N/18.38E, IX.1947, R. Cremer & M. Neumann (IRSN); 1 ♀, P. N. Upemba, Kabwe nr. Muye, 8.47S/26.52E, 1320 m, V.1948, Miss. G. F. de Witte (IRSN); 4 ♀, 3 ♂, P. N. Garamba, several locations, 4.10N/29.30E, V., IX.1950, VI., VII.1952, Miss. H. de Saeger (IRSN), 2 ♂, Equateur, Bokuma, 0.06S/18.42E, VII.1952, R. P. Lootens (MRAC); 3 ♀, 3 ♂, Congo Belge, Kibali-Ituri, Nioka, 2.10N/30.39E, VIII.1952, J. Hecq (MRAC); 1 ♀, Mayumbe, 4.30S/12.30E, IX.1952, R. Mayné (MRAC); 3 ♀, 2 ♂, P. N.G., Anie, Pidigala, 4.27N/29.28E, V., XI.1950, IV., VII.1952, Miss. H. de Saeger (MRAC); 3 ♀, P. N. A., Ruwenzori, Kiurama, 2100 m, X.1953, P. Vanschuytbroeck & V. Hendrickx (IRSN); 1 ♀, Uele, Baye, terr. Bondo, 4.19N/23.40E, VIII.1956, R. F. L. Rooyakkers (MRAC); 1 ♂, Yangambi (Stanleyville), 0.47N/24.28E, XII.1958, P. Dessart (MRAC); 1 ♀, 2 ♂, Lovanium (Kinshasa), 4.16S/15.19E, XII.1962, P. M. Elsen (MRAC). – **Gambia.** 1 ♀, 1 ♂, Bolama, 11.33N/15.37W, VI.–XII.1899, L. Fea (MCGD, ZMUH). – **Ghana.** 2 ♀, 2 ♂, Gold Coast, 67.56 (BMNH); 2 ♀, 2 ♂, Takoradi, 4.55N/1.45W, Besnard, ex coll. Breuning (MRAC); 1 ♂, Mamso, Anenfi, 5.45N/1.22W, IV.–VI.19681, ex coll. Breuning (MRAC); 1 ♀, Boyasi, ca. 10 m SE of Kumasi, 6.42N/1.34W, 1000 ft., VII.1970, I. K. D. Acheampong (BMNH). – **Guinea.** 1 ♀, Asente Akem, 7.53N/9.26W, Junod, coll. Clavareaux (MRAC); 1 ♀, 1 ♂, Dalaba, 10.47N/12.12W, 1200 m, VIII.1945, H. Durand (MNHN); 1 ♀, 1 ♂, Kindia, 10.04N/12.51W, 1964/65, J. Dedycker (MRAC); 1 ex., Pastoria, IX.1983, C. B. Myrzin (CLM); 7 ex., Tabuna Valley, 9.31N/12.46W, IX.1983, II.1984, C. B. Myrzin (CLM); 2 ex., Mt. Gandan, 9.11N/10.33E, IX.1984, C. B. Myrzin (CLM); 1 ex., Forecaniah, 9.25N/13.05W, IX.1984, C. B. Myrzin (CLM). – **Ivory Coast.** 1 ♂, Bingerville, 5.20N/3.53W, II.1896, Le Moult vend, via Reinbek (ZMUH); 1 ♂, Abengourou, 7.11N/3.59W, ex. Coll. Breuning (MRAC); 1 ♀, 1 ♂, 1897, Delafosse (MNHN); 2 ♀, 3 ♂, Haute Cote d'Ivorie, Cercle de Mankono, 7.58N/6.02W, V., VI.1910, A. Chevalier (MNHN); 1 ♀, 2 ♂, Haute Sassandra, pays Dyola, entre zonale et Sanrou, 8.02N/7.19W, V.1910, A. Chevalier (MNHN); 3 ♀, 6 ♂, Cote d'Ivorie, G. Melou (MNHN); 2 ♀, 3 ♂, Bingerville, 1914, G. Melou (MNHN); 3 ♀, 1 ♂, Bingerville, VIII.1961, I.1963, I.1964, J. Decelle (MRAC). – **Kenya.** 1 ♂, Kitale, Uasin Gishu, 1.00N/35.02E, 2100 m, Miss. de l'Omo, C. Arambourg et al. (MNHN); 1 ♂, Kakamega Forest, Buyangu, 0.19N/34.47E, VII.2001, A. Patt (ZFMK); 12 ex., Kakamega Forest, 0.17N/34.45E, X.2001, X.2002, I.2003, fogging *Teclea nobilis* and *Heinsenia dirvelloides*, Th. Wagner, W. Freund & C. Schmidt (ZFMK). – **Nigeria.** 2 ♀, 1 ♂, Old Calabar, 4.56N/8.22E, Murray, ex. coll. Chevrolat (BMNH); 2 ♀, 2 ♂, Vieux Calabar, ex coll. E. Allard (MNHN); 2 ♀, 1 ♂, Baly coll. (BMNH); 2 ♀, 3 ♂, Old Calabar, 67-56 (BMHN); 1 ♂, Old Calabar, coll. Fry, 1905 (BMNH); 1 ♀, 1 ♂, Old Calabar (112.45, BMNH); 5 ♀, 4 ♂, S-Nigeria, Lagos distr., 6.00N/4.00E, IX.1949, W. E. S. Merrett (BMNH); 1 ♀, Erinodo, 7.35N/4.53E, W-fall,

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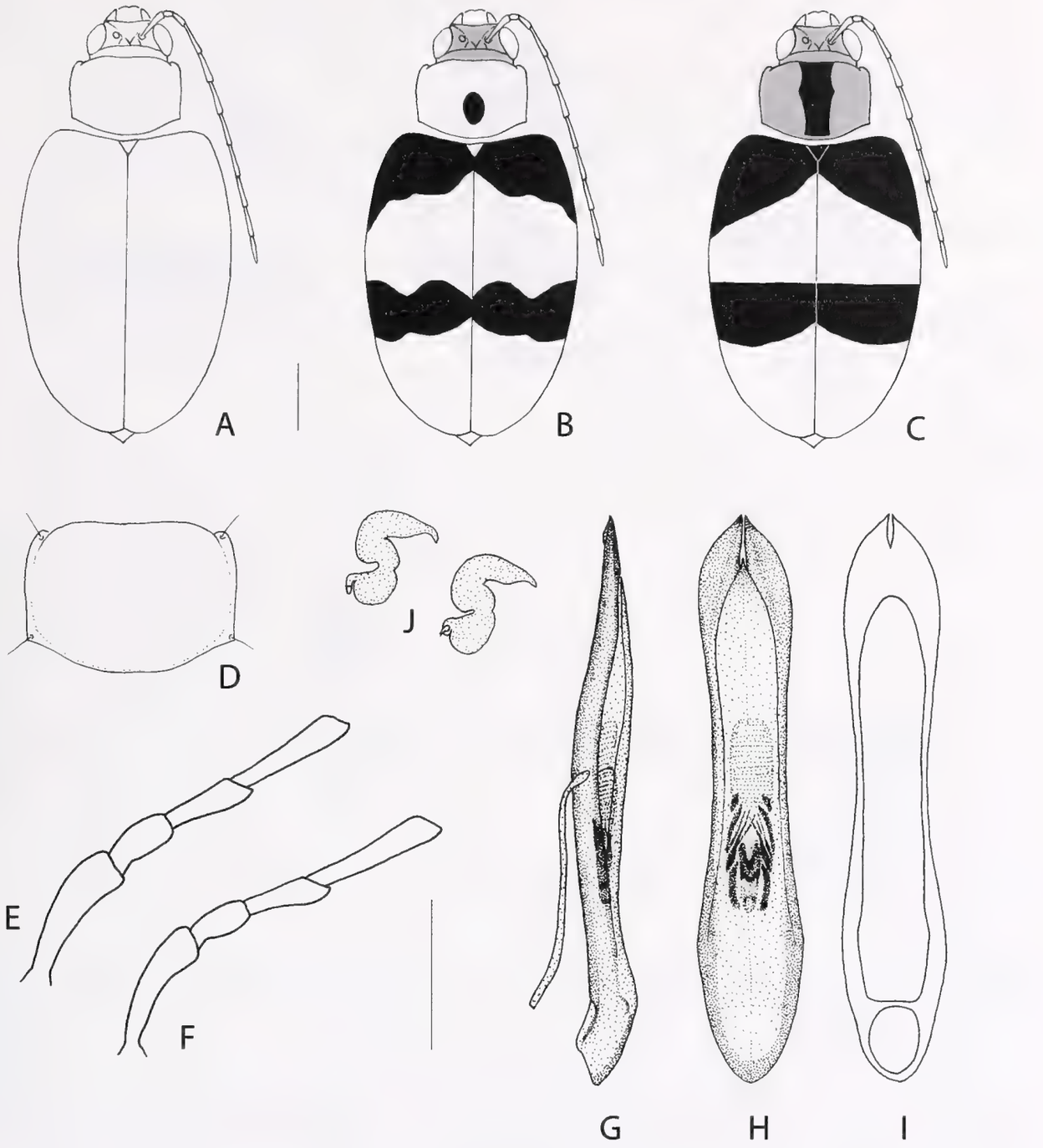

Fig. 8. Morphology of *Monoleptoides centromaculata* (Jacoby, 1900). **a–c.** Habitus showing typical colour variation. **d.** Pronotum, detail. **e, f.** Basal antennomeres one to four of male (e) and female (f). **g–i.** Median lobe, lateral (g), dorsal (h), and ventral, without endophallic structures (i). **j.** Spermathecae of two different females. Scale bars: 1 mm.

III.1972, E. W. Classey (BMNH). – **Sierra Leone.** 1 ♂, Sierra Leone, ex coll. J. Weise (MNHU); 1 ♀, Sierra Leone, 928 (ZMUH); 1 ♂, Sierra Leone (813. BMNH); 1 ♀, 1 ♂, Jacoby coll. (BMNH); 2 ♀, 1 ♂, Baly coll. (BMNH); 1 ♀, 1 ♂, Freetown, 8.13N/13.17W, A. Mocquerys (MNHN); 1 ♂, Rhobomp, 9.05N/12.54W, coll. Fry, 1905 (BMNH); 1 ♀, Rhobomp, coll. Kraatz (DEIS); 1 ♂, Sierra-Leone, Afr. Occ. Angl., Le Moult vend., via Reinbek (ZMUH). – **Togo.** 2 ♀, 2 ♂, Togo, Conradt, coll. Kraatz (3 ex. DEIS, 1 ex. ZMUH); 1 ♂, Bismarckburg, III.–IV.1893, L. Conradt (MNHU); 1 ♂, Bismarckburg, 8.15N/0.55E, V.1904, Glauning (MNHU); 1 ♂ Atakpame, X.1984, K. Erber (ZFMK); 1 ♀, Kloto, Missahoe, 6.59N/0.40E, X.1990, K. Adlbauer (ZFMK). – **Uganda.**

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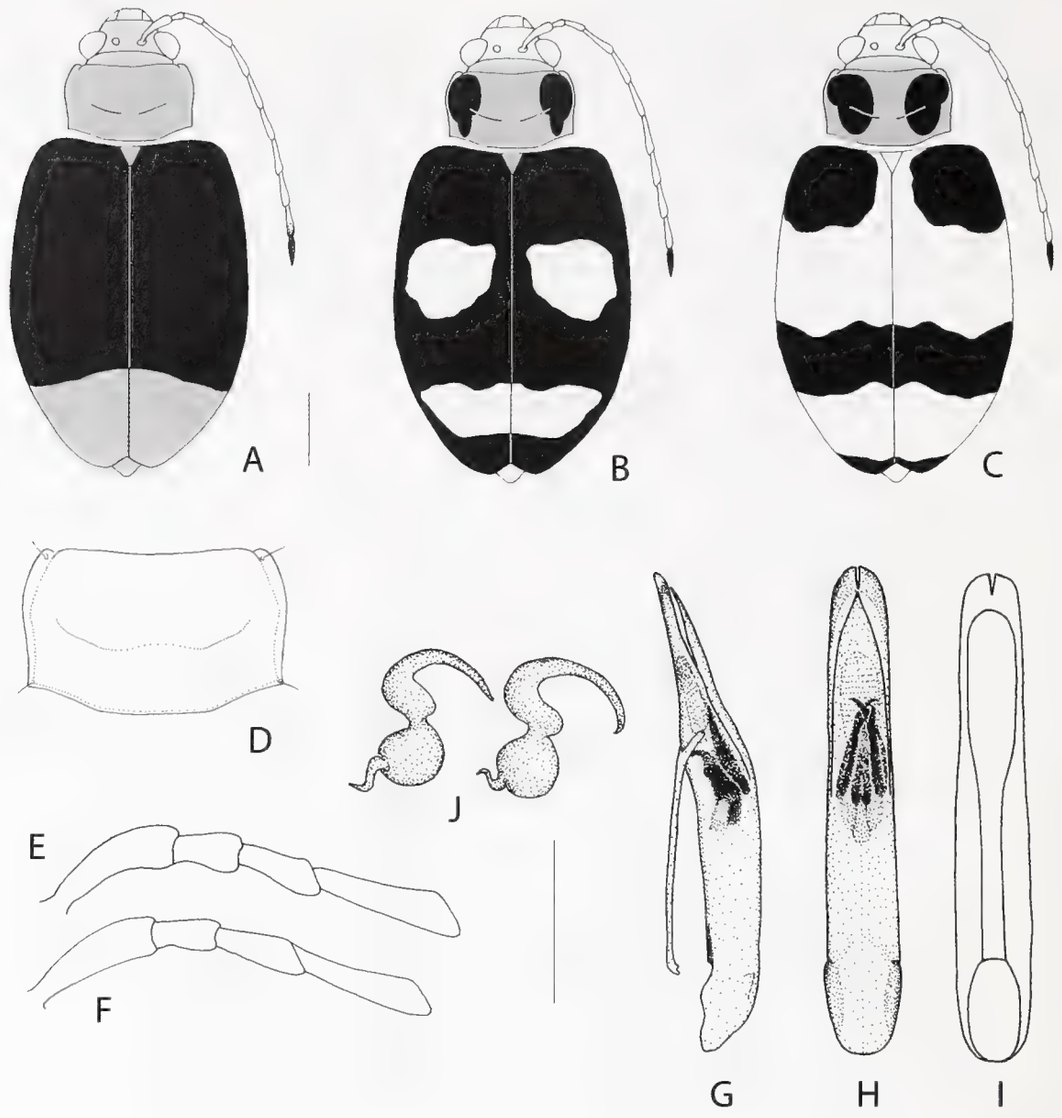

Fig. 9. Morphology of *Monoleptoides sulcata* (Laboissière, 1940). **a–c.** Habitus showing typical colour variation. **d.** Pronotum, detail. **e, f.** Basal antennomeres one to four of male (e) and female (f). **g–i.** Median lobe, lateral (g), dorsal (h), and ventral, without endophallic structures (i). **j.** Spermathecae of two different females. Scale bars: 1 mm.

1 ♀, 1 ♂, Buamba Forest, 0.45N/30.02E, Semliki Valley, XI.1907, S. A. Neave (BMNH); 2 ♂, 2 ♀, Budongo Forest, 1.45N/31.35E, 1200 m, XII.1911, S. A. Neave (BMNH); 1 ♂, Kampala, 0.19N/32.35E, XI.–XII.1920, S. A. Neave (BMNH); 1 ex., Mabira Forest, Chagwe, 0.30N/32.55E, 1300 m, VII.1911, S. A. Neave (BMNH); 6 ex., Budongo Forest, 1.45N/31.35E, I.1997 fogging *Cynometra alexandri* and *Rinorea beniensis*, Th. Wagner (ZFMK); 2 ♀, 1 ♂, Budongo Forest, X.2004, T. Kölkebeck / Th. Wagner (ZFMK). – **Zambia.** 1 ♀, D. Sambesi Gebiet, X.1906, F. Steiner (MNHU). – **Zimbabwe.** 1 ♂, Res. Marangora, 750 m, II.1987, W. Wittmer (NHMB); 1 ♀, 1 ♂, 21 km W Centenary, Miware Raffia Palm Reserve, VIII.1998, M. Rice (TAMU); 1 ♀, Mazowe Dam, 17.31S/30.59E, VII.1998, Coll. Marlin E. Rice (TAMU).

***Monoleptoides centromaculata* (Jacoby, 1900)**, comb. nov.
Candezea centromaculata Jacoby, 1900: 261.

Total length. 4.80–5.90 mm (mean: 5.50 mm; n = 12).

Head. Pale yellow to yellowish-red (Fig. 8a–c), frons usually paler than vertex, palpi and antenna pale yellow, usually only terminal antennomere brownish to black, rarely also two to three sub terminal antennomeres a pale brownish colour. Antenna and all anthomeres very slender, length of second to third antennomere 0.68–0.76 (mean: 0.73), length of third to fourth antennomere 0.54–0.66 (mean: 0.60; Fig. 8e, f).

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Thorax. Pronotum pale yellow, yellow or reddish-yellow (Fig. 8a), sometimes yellow basally and a contrasting reddish colour in the anterior part; 30 % of material with medially placed black markings, either in the form of a black dot just below the middle (Fig. 8b), or sometimes extended to form a median, longitudinal band (Fig. 8c). Pronotum broad (Fig. 8d), distinctly convex, median length to maximum width 0.67–0.71 (mean: 0.69), lateral pronotal margins broad. Pronotum with a distinct, but shallow transverse depression. Elytra pale yellow in two thirds of the material studied (Fig. 8a), others with a transverse black band at the base and another in the apical half of elytra (Fig. 8b, c). Black basal colouration includes the epipleura, and rarely also the scutellum (Fig. 8c), which is usually yellow (Fig. 8a, b). Elytra broad, lateral margins distinctly convexly rounded, length of elytron 3.80–4.55 mm (mean: 4.21), maximum width of both elytra 2.70–3.30 mm (3.02 mm), width of both elytra to length of elytron 0.68–0.77 (mean: 0.72). Legs usually pale yellow, only two specimens with contrasting dark brown tibae and tarsi on all legs.

Abdomen. Sternites and pygidium pale yellow to reddish-yellow.

Male genitalia. Median lobe broad, widening distinctly sub apically, pointed at the apex and deeply incised (Fig. 8h, i); shallowly sigmoidal in lateral view (Fig. 8g); endophallus usually with groups of comparatively short spiculae.

Female genitalia. Spermatheca with small nodulus and broad cornu (Fig. 8j).

Diagnosis. A large species, with elytra that are broadly and convexly rounded laterally, and only found in southern Africa. Species that are most similar to *M. centromaculata* are *M. duplicata* and *M. thomsoni*. Both species occur sympatrically with *M. centromaculata* in the southern DRC, Zambia and Zimbabwe, but neither has been recorded from the Republic of South Africa, where the latter species is widely distributed. The pronotal spot from which the species name is derived (Fig. 8b, c) is found in

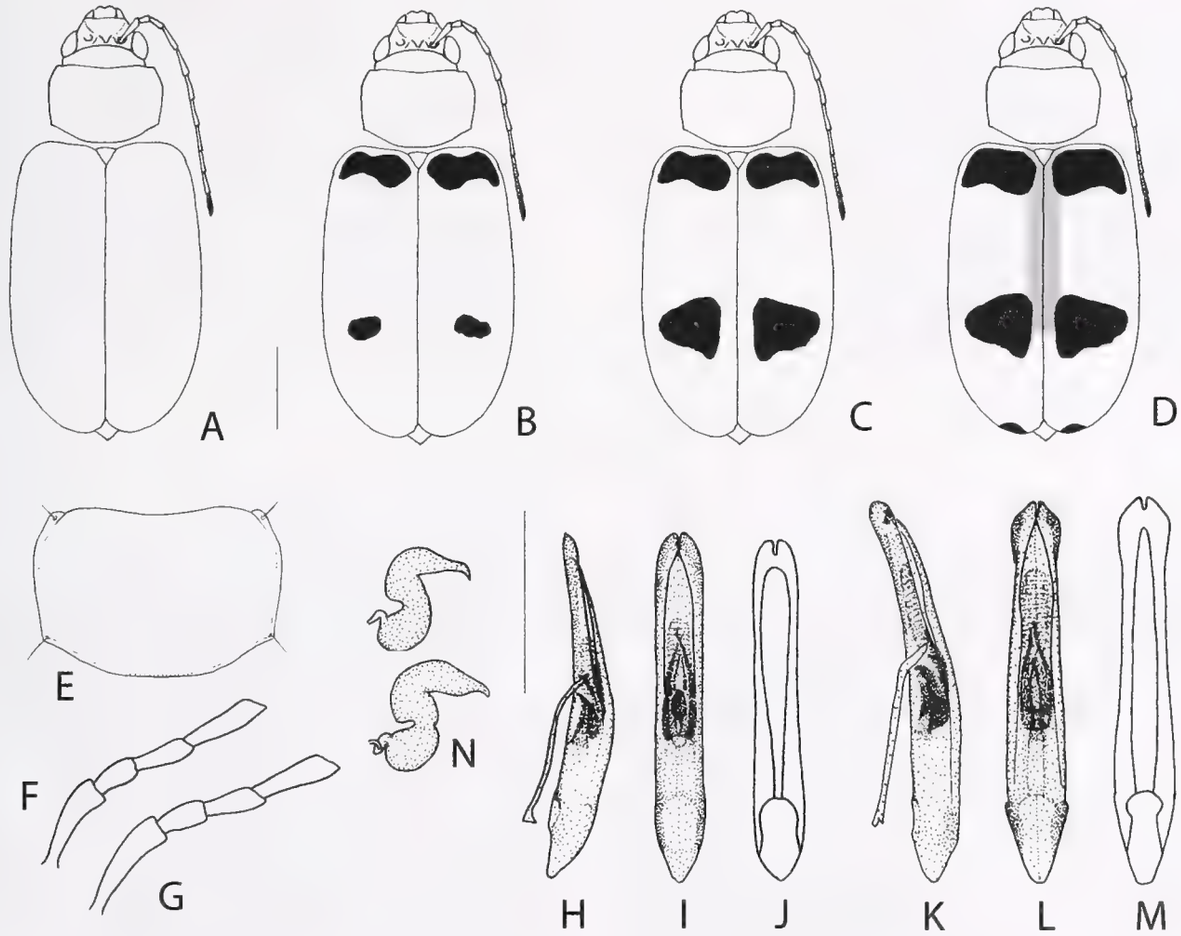

Fig. 10. Morphology of *Monoleptoides didyma* (Gerstaecker, 1871). **a–d.** Habitus showing typical colour variation. **e.** Pronotum, detail. **f, g.** Basal antennomeres one to four of male (f) and female (g). **h–j.** Median lobe of a typical specimen, lateral (h), dorsal (i), ventral, without endophallic structures (j). **k–m.** Median lobe of a large specimen, lateral (k), dorsal (l), and ventral, without endophallic structures (m). **n.** Spermathecae of two different females. Scale bars: 1 mm.

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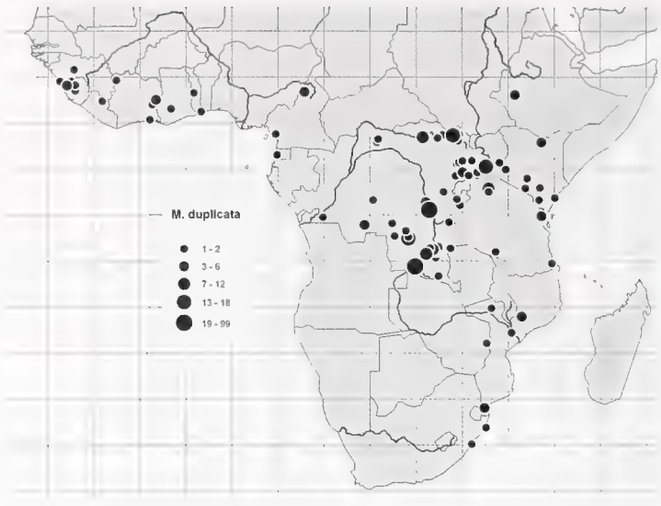

Fig. 11. Known distribution of *Monoleptoides duplicata* (Sahlberg, 1823).

Fig. 12. Known distribution of *Monoleptoides trivialis* (Gerstaecker, 1855).

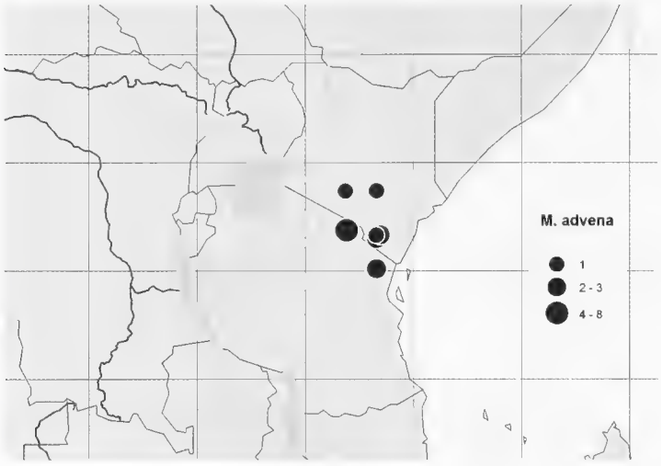

Fig. 13. Known distribution of *Monoleptoides advena* (Weise, 1909).

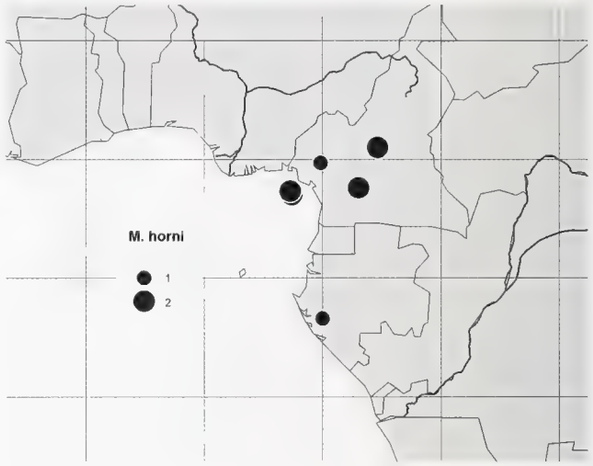

Fig. 14. Known distribution of *Monoleptoides horni* (Laboissière, 1931).

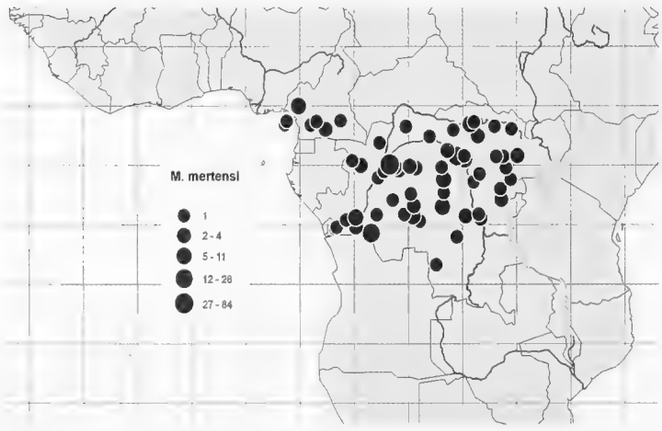

Fig. 15. Known distribution of *Monoleptoides mertensi* (Laboissière, 1940).

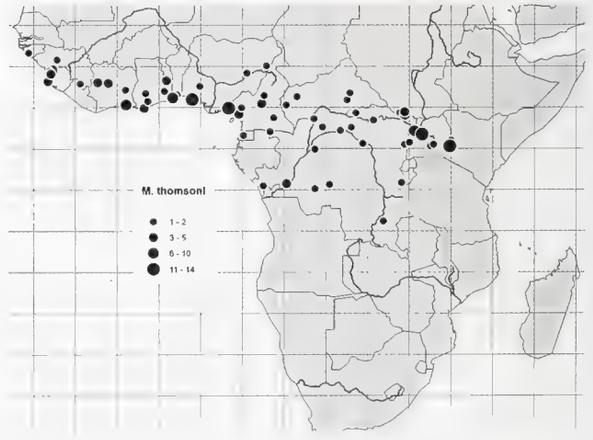

Fig. 16. Known distribution of *Monoleptoides thomsoni* (Allard, 1888).

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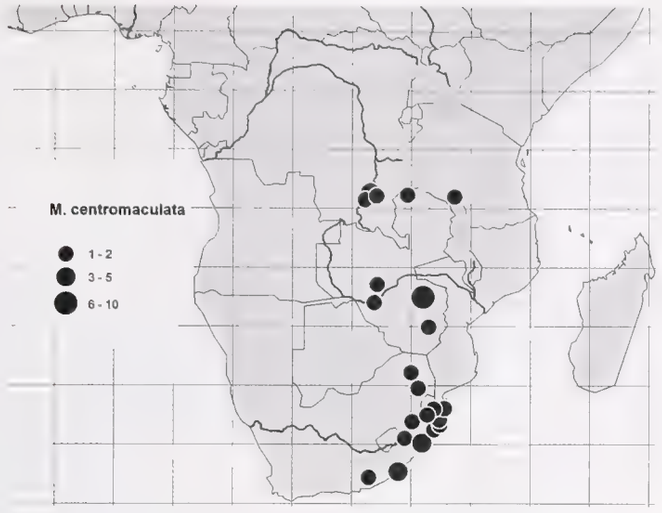

Fig. 17. Known distribution of *Monoleptoides centromaculata* (Jacoby, 1900).

Fig. 18. Known distribution of *Monoleptoides sulcata* (Laboissière, 1940).

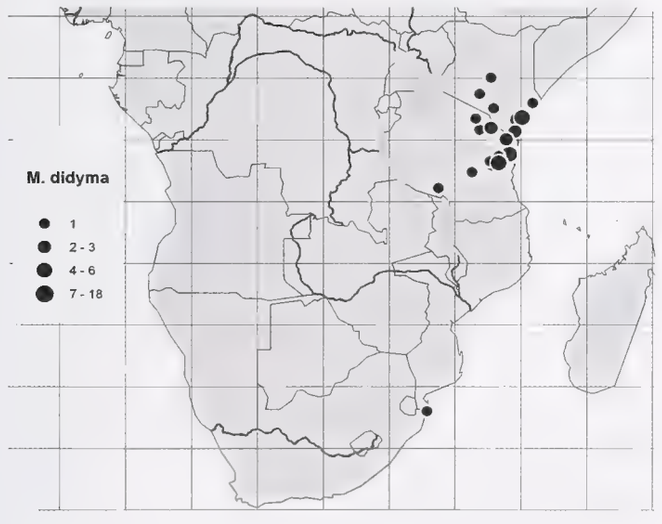

Fig. 19. Known distribution of *Monoleptoides didyma* (Gerstaecker, 1871).

most species in southern Africa, but this pattern is also rarely recorded in *M. duplicata* (Fig. 1d, e) and *M. thomsoni* (Fig. 7e). The elytra are on average broad (width of both elytra to length of elytron: 0.68–0.77; *M. duplicata* same range, but *M. thomsoni* on average narrower: 0.64–0.74). The latter species also has a narrower pronotum (pronotal length to maximum width: 0.66–0.74; *M. centromaculata*: 0.67–0.71). Antennae very slender in *M. centromaculata*. However, only the characteristic broad flat median lobe (Fig. 8g–i), most similar to the much smaller *M. trivialis* (Fig. 3g–i), allows clear differentiation from *M. duplicata* (Fig. 2i–n) and *M. thomsoni* (Fig. 7i–n), particularly in entirely yellow specimens.

Distribution. Restricted to southern Africa from Katanga, Zambia and southern Tanzania towards the Eastern Cape Province (Fig. 17). Occurring from sea level up to montane areas in south-eastern South Africa.

Type material

Lectotype: ♂ "Malvern, Natal / Candezea centromaculata type Jac. / Jacoby Coll. 1909-28a / 107 / Type / Lectotypus Th. Wagner desig. 2005 Candezea centromaculata J." (BMNH; Fig. 20j). Type locality: South Africa, KwaZulu-Natal, Malvern, 29.53S/30.55E. – Paralectotypes: 1 ♀ "Malvern N 2 / 99 67a / Jacoby 1909-28a" (BMNH); 1 ♂ "Malvern Natal 14-10-02 / S. Africa Natal Malvern 14.X.1902 G. A. K. Marshall / Jacoby Coll. 1909-28a" (BMNH). Jacoby gave no number on the specimens his description based on. There are three specimens from the type locality "Natal, Malvern" available in his collection, and a lectotype is herein designated to fix the name on single specimen.

Further material examined

Congo (Zaire). 1 ♀, P. N. Upemba, R. Mubale, 8.44S/26.56E, 1480 m, V.1947, Miss. G. F. de Witte (IRSN); 1 ♀, P. N. Upemba, Kabwe sur Muye, 8.49S/26.49E, 1320 m, V.1948, Miss. G. F. de Witte (IRSN); 1 ♀, 4 ♂, P. N. Upemba, Mabwe, 8.39S/26.31E, 585 m, XI.1948, Miss. G. F. de Witte (IRSN); 2 ♀, P. N. Upemba, Kanonga, 9.15S/26.08E, 675 m, II.1949, Miss. G. F. de Witte (IRSN); 1 ♀, P. N. Upemba, Kabwekanono, 8.55S/27.05E, 1815 m, IV.1949, Miss. G. F. de Witte (IRSN). – **South Africa.** 1 ♂, Natal (MNHN); 2 ♀, Natal, Dr. Martin (ZFMK); 2 ♀, Natal, jan. / nov., Trgdh (NHRS); 1 ♀, 1 ♂, Natal, Malvern II.1896, II.1899 (BMNH); 1 ♀, Umkomaas Mts., 29.29S/29.27E, IX.1897, G. A. K. Marshall (BMNH); 1 ♀, East London, XII.1912, H. Thomsen (MNHU); 1 ♀, Weenen, 28.05S/30.06E, IX.1926, H. P. Thomasset (BMNH); 1 ♂, Colony du Cap, East London, 29.53S/30.55E, 1923, R. Ellenberger (MNHN); 1 ♀, van Staden Pass, 33.45S/25.10E, III.1954,

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Fig. 20. Primary types; left: overview; right: detail, scale in mm. **a.** Holotype of *Crioceris duplicata* Sahlberg (1823); **b.** Lectotype of *Monolepta fasciaticollis* Laboissière, 1940a; **c.** Holotype of *Monolepta quinquepunctata* Laboissière, 1940. **d.** Holotype of *Monolepta trivialis* Gerstaecker, 1855. **e.** Holotype of *Candezea umbilicata* Laboissière, 1920. **f.** Holotype of *Monolepta didyma* Gerstaecker, 1871. **g.** Holotype of *Monolepta thomsoni* Allard, 1888. **h.** Lectotype of *Monolepta advena* Weise, 1909. **i.** Holotype of *Monolepta keniensis* Bryant, 1953. **j.** Lectotype of *Candezea centromaculata* Jacoby, 1900. **k.** Lectotype of *Candezea horni* Laboissière, 1931. **l.** Holotype of *Candezea mertensi* Laboissière, 1940. **m.** Holotype of *Candezea sulcata* Laboissière, 1940. **n.** Holotype of *Candezea sexplagiata* Laboissière, 1940.

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clearing in native forest, J. Balfour-Browne (BMNH); 1 ♂, Zululand, Empangeni, 28.45S/31.54E, XI.1975, P. E. Reavall (TMSA); 1 ♀, Natal, St. Lucia, 28.22S/32.25E, III.1977, G. L. Prinsloo (SANC); 1 ♀, Yellow Wood Peak, 32.46S/26.25E, XII.1978 (SANC); 3 ♂, Transkei, Dwesa Forest Reserve, 32.17S/28.50E, II.1985, "beaten indigenous forest", S. Endrödy-Younga (TMSA); 1 ♂, Transvaal, Magoebaskloof, 23.54S/30.00E, III.1986, B. Grobbelaar (SANC); 1 ♂, Transvaal, Uitsoek, Groothloof, 25.15S/30.38E, IX.1988, Endrödy-Younga (TMSA); 1 ♀, Transvaal, Farm Kuleni, 27.54S/32.22E, 50 m, II.1990, B. Grobbelaar (SANC); 1 ♀, Natal, Kosi Bay NR, 26.58S/32.48E, 50 m, II.1990, B. Grobbelaar (SANC); 1 ♀, Natal, Banga Neck, 27.00S/31.53E, II.1990, N. Verheijen (SANC); 1 ♀, Kwa Zulu-Natal, Itala GR, 27.30S/31.20E, XII.1995, F. Koch (MNHU). – **Tanzania.** 1 ♀, Langenburg, Ineteyanur, 9.01S/33.39E, VI.1898, Fülleborn (MNHU); 1 ♀, Usegutva?, XII.1913, Coll. Eichelbaum (MNHU). – **Zambia.** 1 ♀, Tapina, Namoyea, 16.26S/27.08E, V.1914, H. C. Dollman (BMNH); 1 ♀, Mweru-Wantipa, 8.50S/29.40E, II.1944, H. J. Brédo (IRSN). – **Zimbabwe.** 1 ♀, Chirinda, 20.05S/31.28E, X.1905, G. A. K. Marshall (BMNH); 1 ♀, Gwaai River, 17.59S/26.52E, II.1921, C. E. Godman (BMNH); 5 ♀, 5 ♂, Mazowe Dam, 17.31S/30.59E, VII.1998, coll. Marlin E. Rice (TAMU).

***Monoleptoides sulcata* (Laboissière, 1940)**, comb. nov.
Candezea sulcata Laboissière, 1940a: 76.
Candezea sexplagiata Laboissière 1940a: 79; syn. nov.

Head. Pale yellow, yellow to brownish-red, vertex usually much darker than the frons (Fig. 9b, c). Palpi and antennae pale yellow, usually only terminal antennomere brown to black (Fig. 9a–c), scape and pedicel rarely pale brown dorsally. Length of second to third antennomere 0.75–0.86 (mean: 0.83), length of third to fourth antennomere 0.52–0.63 (mean: 0.58; Fig. 9e, f).

Thorax. Pronotum reddish-yellow to brownish-red in about 66 % of material examined, with two large dark brown spots, one on either side of the pronotal disc (Fig. 9b), or saddle-like colouration when the spots reach the lateral margins (Fig. 9c). Pronotum very broad, median pronotal length to width 0.56–0.61 (mean: 0.59), with a distinct, medially interrupted, transverse depression (Fig. 9d). Elytra ovate, length of elytron 3.80–4.80 mm (mean 4.34), maximum elytral width 2.80–3.36 mm (mean: 3.06); maximum width of both elytra to length of elytron 0.65–0.78 (mean: 0.72). Elytra in two specimens entirely black; whereas about 50 % of material examined have black elytra which are yellowish to brownish-red apically, sometimes covering up to the terminal quarter of the elytra (Fig. 9a); 20 % of specimens are yellow with broad transverse black bands at base of elytra and beyond the second third, also usually black apically (Fig. 9c); in the remaining specimens black colouration is more robust and the elytra have black outer margins, and often a black suture too (Fig. 9b). Scutellum yellow to red. Legs pale yellow, femora often slightly reddish, distal part of femora and basal part of tibae rarely dark brown or tarsi a pale brownish colour.

Abdomen. Abdominal segments and pygidium yellow to brownish-red.

Male genitalia. Aedeagus comparatively wide and short. Median lobe parallel-sided, robust, bluntly rounded apically (Fig. 9h, i), widening distinctly after the apical third in lateral view, (Fig. 9g). Tectum very short, almost constantly converging towards the apex. Endophallic structures with distinct hooks and one pair of long spiculae in the apical third.

Female genitalia. Spermatheca with large, nearly spherical nodulus, and slender, distinctly curved cornu (Fig. 9j).

Diagnosis. Despite the colouration showing great variability, the species can easily be recognized simply by colour patterns. Black elytra with a reddish apex, as in the type of *M. sulcata* (Fig. 9a), or specimens with lateral pronotal spots, as in the type of *M. sexplagiata* (similar to Fig. 9b); do not occur in any other species of *Monoleptoides*. Specimens with black elytra and a red elytral tip are, at first glance similar to some species of *Monolepta*, and some type specimens of *Monolepta bifossulata* Laboissière, 1940 actually belong to *M. sulcata*. The sympatrically occurring *Monolepta mpangae* Wagner, 2000 and *Monolepta apicaloides* Wagner, 2003b are also similar, but the shorter third antennomere and the pronotum which lacks a distinct transverse depression, allow easy differentiation of these species from *M. sulcata*. In doubtful cases the genital patterns of both sexes allow a clear differentiation between *Monolepta* species and *Monoleptoides sulcata*.

Distribution. Restricted to the Albertine Rift Region in eastern DRC (Kivu), Uganda and up into western Kenya (Fig. 18).

Type material

Candezea sulcata: Holotype, ♂, "Musée du Congo, Forêt Mayumbu (2100) (Nyamuragira), 14-26-VI-35 de Witte, Parc Nat Albert, 15, 38. / Type ♂ C. sulcata / Type ♂ [Laboissière`s label] / R. Dét. B 4589 / Candezea sulcata m. V. Laboissière – Dét." (MRAC; Fig. 20m). Type locality: Democratic Republic of the Congo, Kivu, 1.42S/29.20E. – Paratype. 1 ♀, same data as holotype (IRSN). Laboissière mentioned one male and one female

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Table 1. Numbers of material studied sorted after collections (details and legend for abbreviations see chapter methods).

	M. duplicata	*M. trivialis*	*M. didyma*	*M. thomsoni*	*M. advena*	*M. centromaculata*	*M. horni*	*M. mertensi*	*M. sulcata*	Σ
BMNH	34	1	5	44	4		9	1	7	**105**
DIES	1			4		1				**6**
HMNH	1									**1**
IRSN	70	1	1	19		10	3	55	4	**163**
MCGD				2				2		**4**
MIZT				1						**1**
MMMU	6			1						**7**
MNCN							6			**6**
MNHN	18	7	6	45		2	1	33		**112**
MNHU	27	11	12	10	7	4	5	1		**77**
MRAC	238	1		39				201	28	**507**
MZHF			2							**2**
MZSF	1	1	9							**11**
NHMB				1						**1**
NHMW		1						1	1	**3**
NHRS	4	1		1	2	2		1	1	**12**
NMK	32		2		2				2	**38**
NNML	1									**1**
OUMNH	1									**1**
priv. coll.	7	1	7	11				1	6	**33**
SANC	1		1			5				**7**
TAMU	1			3		10				**14**
TMSA	2	1				4				**7**
USMN	1									**1**
ZFMK	3		12	25	1	2				**43**
ZISP	2									**2**
ZMUC	5	1								**6**
ZMUH	5	1	1	8			1	1	2	**19**
Σ	**461**	**28**	**58**	**213**	**17**	**48**	**17**	**297**	**51**	**1190**

specimen in his original description. Since only the male has an additional „Type“ label, it can be treated as holotype by inference.

Candezea sexplagiata: Holotype, ♂ ”Musée du Congo, Kamatembe (2100 m.), 7-23-I-1935 G.F. de Witte, Parc Nat. Albert, 992. / Type C. sexplagiata / Type [Laboissière`s label] / R. Dét. A 4589 / Candezea sexplagiata m. V. Laboissière – Dét. / Holotypus” (MRAC; Fig. 20n). Type locality: Democratic Republic of the Congo, Kivu, 1.32S/29.10E. Holotype by original designation.

Monolepta bifossulata Laboissière, 1940: In a recent revision of this species (Wagner 2003b) a lectotypus was designated. However, six specimens of the original series of syntypes belong as paralectotypes to *Monoleptoides sulcata*: 5 ex., Kivu, Ruwenzori, Kalonge, 2050 m, 0.33N/29.80E, VII.–VIII.1932, L. Burgeon (MRAC); 1 ex., Kivu, Ruwenzori, Valley Butagu, 2000 m, 0.35N/29.72E, XI.1931, Mme L. Lebrun (MRAC).

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Further material examined.

Congo (Zaire). 1 ex. Birunga, Nied., Pr. W. Exp. Gyld. „Semicincta Sahlberg" (NHRS); 1 ex., Mawakota, 2.58N/26.44E, VI.1931, van Someren (NMK); 1 ex., Kivu, Volc. Mikeno, Rweru, Bambous, 2400 m, 1.45S/29.43E, VII.1934, G. F. de Witte (IRSN); 1 ex., Kivu, Sake, 1.57S/29.05E, V.1937, J. Ghesquière (MRAC); 1 ex., Kivu, Costermansville, 2.27S/28.51E, VII.1937, H. J. Bredo (MRAC); 1 ex., Kivu, Nzombe, Amont, 200 m près de Mwana, 3.18S/28.53E, 1952, Froidebise (MRAC); 1 ex., Kivu, Rwankwi, 1.32S/29.32E, VII.1951, J. V. Leroy (MRAC); 2 ex., Kivu, Ibanda, 1952, M. Vandelanotte (MRAC); 1 ex., Kivu, Terr. Mwenga, S. O. Itombwe, Luiko, 1900 m, 3.46S/28.43E, I.1952, L. Leleup (IRSN); 1 ex., P. N. A., Massif Ruwenzori, Kivu, Kalonge, 2210 m, 0.20N/29.51E, VIII.1952, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Kikybe près Kalonge, 2180 m, IX.1952, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Kalonge, Kiondo ya Kwanza, 2030 m, 0.22N/29.53E, X.1952, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Kalonge, Riv. Kamahoro, aff. Butahu, 2010 m, 0.02N/29.13E, II.1953, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Kalonge, 2000 m, Ruiss. Katsambu, affl. Butahu, 0.02N/29.13E, I.1953, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Mont Ibale près Kyandolire, 1800 m, 0.05N/29.43E, III.1953, P. Vanschuytbroeck & J. Kekenbosch (MRAC); 3 ex., Kibali-Ituri, Nioka, 2.17N/30.40E, VI.1953, J. Hecq (MRAC); 1 ex., P. N. A., Massif Ruwenzori, Kikyb près Kalonge, 2180 m, 0.21N/29.50E, II.1955, P. Jolivet & R. Fonteyne (MRAC); 1 ex., P.N.A., Massif Ruwenzori, Kalonge, Gîte Ruwenzori, 2080 m, II.1955, P. Jolivet & R. Fonteyne (MRAC); 1 ex., Kivu, Butembo, Musai, 0.15N/29.28E, VII.1953, H. J. Brédo (MRAC); 3 ex., Kivu, Butembo, vallée de la musosa, 0.15N/29.28E, V.1967, R. P. Lejeune (MRAC). – **Kenya.** 1 ex., Brit. E. Africa, Yala R., S. edge Kakumga forest, 4800–5300 ft, 0.12N/34.27E, V.1911, S. A. Neave (BMNH). – **Rwanda.** 1 ex., Mt. Mbude, S. du Lac Luhondo, 2000 m, 1.38S/29.45E, I.1953, P. Basilewski (MRAC); 1 ex., Cyangugu, Gishoma, 2.28S/28.56E, II.1983, leg. H. Mühle (CHK); 4 ex., Nyakabuye, 1.58S/29.59E, XII.1985, H. Mühle (CHK). – **Tanzania.** 4 ex., N. W. Tanganika, 1910, Grauer (NHMW). – **Uganda.** 1 ex., brit. Ost-Afrika, Kampala, Kabule, 0.32N/32.58E, VI.1911, Dr Nägele (MNHU); 1 ex., Mpanga forest, Toro, 4800 ft, 0.25N/32.08E, XI.1911, S. A. Neave (BMNH); 1 ex., Shores of L., Isolt or Wamala, 3800 ft, 0.05N/31.52E, I.1912, S. A. Neave (BMNH); 3 ex., between Mitiana & Entebbe, 3.800 ft, 0.40N/32.05E, I.1912, S. A. Neave (BMNH); 1 ex., Kampala, 0.32N/32.58E, 1916, C. C. Gowdey (BMNH); 1 ex., Kampala, 0.17N/32.28E, XI.1938 A. F. J. Gedye (NMK); 2 ex., Kibale Forest, U. Kanyawara, 0.50N/31.06E, VII.–VIII.1998, L. Schmidt (ZFMK).

***Monoleptoides didyma* (Gerstaecker, 1871)**, comb. nov.
Monolepta didyma Gerstaecker, 1871: 83.

Total length. 3.90–4.90 mm (mean: 4.52 mm; n = 18).

Head. Pale yellow, yellow or rarely reddish-yellow. Palpi and antennae pale yellow, terminal antennomere dark brown to black, one to three sub terminal antennomeres brownish, each becoming darker towards apex (Fig. 10a–d). Length of second to third antennomere 0.65–0.76 (mean: 0.71), length of third to fourth antennomere 0.67–0.77 (mean: 0.71) (Fig. 10f, g).

Thorax. Pronotum pale yellow, rarely reddish-yellow, distinctly transverse (Fig. 10e), median length to maximum width 0.62–0.68 (mean: 0.64). Elytra sub parallel (Fig. 10a–d), coarsely punctuated, slightly flattened dorsally (in lateral view), length of elytron 2.90–3.60 mm (mean 3.33), maximum elytral width 1.85–2.70 mm (mean: 2.24); maximum width of both elytra to length of elytron 0.62–0.71 (mean: 0.66). Elytra in about 30 % of material examined pale yellow, specimens thus have a completely pale yellow dorsum (Fig. 10a); other specimens with a black elytral base which does not spread to either elytral margin (Fig. 10b–d), and can rarely be separated into a humeral and a parascutellar spot; elytra of 60 % of material examined have a black spot in the apical half (Fig. 10b–d); 40 % have a black elytral tip (Fig. 10d); only three of the specimens studied have brownish-red colouration along the basal two-thirds of the suture (Fig. 10d). The entire spectrum of colour polymorphism, from completely yellow, to specimens with all the spots and partly brownish-red suture, can occur within one population e. g. specimens collected in Arabuko Sokoke Forest. Legs pale yellow.

Abdomen. Pale yellow.

Male genitalia. Median lobe sub parallel, short, apical part of the median lobe parallel (Fig. 10h–j) or widening slightly apically (Fig. 10k–m), particularly in large specimens where the apex is robust and bluntly rounded. Tectum parallel-sided in the basal two thirds, converging constantly from there towards the apex. Endophallus with one pair of robust spiculae (Fig. 10h–m).

Female genitalia. Spermatheca with small nodulus, and broad cornu (Fig. 10n).

Diagnosis. *Monoleptoides didyma* is the smallest species in this group. Its colouration is very similar to the sympatrically occurring *M. trivialis*, but in specimens with ely-

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tral spots, *M. didyma* has a single spot in the apical third of each elytron, whereas *M. trivialis* has two spots with very few exceptions (Figs 3b, c, 10b–d). Both species can be distinguished by the shape of the pronotum (Figs 3d, 10e) and the length of the basal antennomeres (Figs 3f, 10f, g) (see morphometric data under *M. trivialis*). In doubtful cases, males of both species can easily be distinguished by the shape of the median lobe (Figs 3g–i, 10h–m).

Distribution. Most specimens collected in the coastal regions of Kenya, Tanzania, southwards to KwaZulu-Natal (Fig. 19), with only a few from the interior of those countries.

Type material examined

Holotype, probably ♂ (abdomen absent), "Didyma Gerst., Wanga, v. d. Decken / 56684" (MNHU; Fig. 20f). Type locality: Kenya, Wangi, 2.00S/40.55E. Holotype by inference, since there is only one specimen listed under this label number in the "Eingangsbuch" in MNHU.

Further material examined

Kenya. 1 ♂, Lower Tana, Sabaki, 3.09S/40.07E, IV.–V.1932, Turner & McArthur (NMK); 1 ♂, Meru, 0.03N/37.42E, V.1936, N. H. L. Krauss (BMNH); 1 ♀, 1 ♂, Arabuko Sokoke, 3.20S/39.52E, VI.1940, T. H. E. Jackson (BMNH); 1 ♀, 1 ♂, Diani Beach, 4.18S/39.35E, VII.1951, N. L. H. Kraus (BMNH); 1 ♂, Nairobi, 1.17S/36.50E, II.1973, ad lucem, H. Silfverberg (MZHF); 1 ♂, Shimba Hills NR, Makadara Forest, 4.13S/39.25E, XI.1982, M. Clifton (NMK); 1 ♂, Kibwazi, Tsavo, Paro, 2.25S/37.58E, 1300 m, XII.1989, Werner (CMD); 2 ♀, 3 ♂, Dint. di Malindi, 3.13S/40.07E, XI.–XII.1989, L. Bartolozzi et al. (MZSF); 1 ♀, Malindi, Gede Forest, V.1990, Werner (CMD); 2 ♀, 2 ♂, Kilifi distr., Arabuko Sokoke, Forest Reserve, IX.–X.1992, V.–VI.1994, L. Bartolozzi et al. (MZSF); 1 ♂, Diani Beach, II.2001, A. Drugmont & N. Warzée (IRSN); 6 ♀, 6 ♂, Arabuko Sokoke, 3.20S/39.52E, V. Clausnitzer (ZFMK). – **South Africa.** 1 ♀, Kosi Bay, Banga Nek, 27.00S/32.53E, 50 m, II.1990, B. Grobbelaar (SANC). – **Tanzania.** 1 ♀, Zanzibar, 6.10S/39.12E, coll. Raffray (MNHN); 3 ♀, 3 ♂, Zanguebar, Mhonda Ouzigoua, A. Hacquard Mis. ap. 1879, 1.Trim. 1880 (1 ex. MNCN, 5 ex., MNHN); 2 ♀, 1 ♂, Pare Berge, 4.00S/37.45E, 1600 m, 1903/1906, Chr. Schroeder (MNHU); 1 ♂, Arusha, 3.22S/36.38E, II.1905, Abel (MNHU); 1 ♀, 1 ♂, Pugu, 6.59S/37.49E, XII.1913, Methner (MNHU); 1 ♀, 1 ♂, Tanga, 5.07S/39.05E, III.1916, Methner (MNHU); 1 ♀, 1 ♂, Narobi bei Tanga, 4.57S/38.56E (MNHU); 1 ♀, Sansibar "60586", Hildebrandt (MNHU); 1 ♀, Bagamoyo, 6.19S/38.20E, Le Moult vend., via Reinbek (ZMUH); 1 ♂, Morogoro, 6.49S/37.40E, I.1974, H. Silfverberg (MZHF); 4 ♂, pres Pwani, 70 km E of Morogoro, 6.50S/38.20E, 300 m, 6.38S/38.08E, XII.2006, F. Kantner (CK); 1 ♂, 80 km NE of Iringa, 650 m, 7.37S/36.18E, I.2007, F. Kantner (CK).

IDENTIFICATION KEY

Most species of *Monoleptoides* gen. nov. are characterized by high polychromatism which made the identification complicated. In eight of the nine species, completely yellow specimens occur and in these cases often the male genitalia only allow a reliably identification. Females without males from the same locality are often hardly, if not impossible to identify, since the spermatheca between most species show no significant differences. On the other hand, specimens with dorsal pattern can often be identified quite easily and thus it seems to be appropriate, to split the key into two parts, one for the entirely yellowish ones that is mainly based on male genitalic patterns, and a second part for specimens with different dorsal colouration.

1 Specimen entirely yellow, dissection of male genitalia is necessary for a reliable identification..... **15**
– Specimen with elytra bearing black, brownish-red or red colouration, such as: black spots (e. g. Figs 2b, 3b, 4b, 10b, 6b), transverse bands (e. g. Figs 2c, 6c, 7c, 8b), and rarely longitudinal stripes (Fig. 4c); sometimes combined with a reddish suture (Figs 4d, 10d); sometimes with only a brownish-red base (Fig. 7b); rarely combined with a small sub apical black spot (Fig. 6a), or the elytra mainly black with the apical third red (Fig. 9a), or with yellow spots (Fig. 9b) **2**

2 Elytra predominantly yellow, pronotum pale yellow to reddish, rarely with median spot (Fig. 2d) that can be enlarged to a longitudinal stripe (Fig. 8c) **3**
– Elytra predominantly black with the apical third red (Fig. 9a), or yellow spots (Fig. 9b), pronotum always red, often with two black discal patches (Fig. 9b, c); restricted to the Albertine Rift, Uganda and western Kenya ..... ***M. sulcata***

3 Elytra with reddish to brownish-red base, tip or suture, often also with black spots **4**
– Elytra with yellow and black colouration only..... **7**

4 Elytra with reddish to brownish-red base and tip (Figs 7b, 6a) **5**
– Elytra with reddish to brownish-red suture (Fig. 4d) **6**

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5 Smaller, pronotum narrow (pronotal length to width 0.66–0.74; Fig. 7f), always without sub apical spot (Fig. 7b); mainly Nigeria and adjacent countries, rare colouration of ..... ***M. thomsoni***
– Larger, pronotum wider (pronotal length to width 0.58–0.68; Fig. 6d), without or with sub apical black spot (Fig. 6a); restricted to Cameroon and the Congo basin ..... ***M. mertensi***

6 Smaller (total length 3.90–4.90 mm), fourth antennomere short (length of third to fourth antennomere 0.67–0.77; Fig. 10f, g); coastal regions from Kenya to KwaZulu-Natal, rare colouration of ..... ***M. didyma***
– Larger (total length 5.00–6.70 mm), fourth antennomere long (length of third to fourth antennomere 0.57–0.66; Fig. 4f, g); montane areas of northern Tanzania and Kenya ..... ***M. advena***

7 Elytra have smaller black spots at humerus and usually also in the apical third that do not reach the suture, anterior margin or epipleura (Figs 2b, 3b, c, 4b, 10b, c) **8**
– Elytra have a more or less broad black transverse bands (rarely only humeral spots, at the base that reach suture), anterior margin and extend onto the epipleura..... **11**

8 Only circular humeral spots and small transverse sub apical spots (Fig. 2b), examination of median lobe necessary (Fig. 2i–n); colouration type predominant and commonly found in the Congo basin ..... ***M. duplicata***
– Humeral or sub humeral elytral spots larger, circular or transverse, sub apical spots of different shape and size (Figs 3b, c, 4b, 10b, c), rarely connected with the sub humeral spot (Fig. 4c) **9**

9 Larger (total length 5.00–6.70 mm), with circular sub humeral spots (Fig. 4b), rarely with longitudinal stripes (Fig. 4c), pronotum very broad (pronotal length to width 0.57–0.66; Fig. 4e); from montane areas of northern Tanzania and Kenya ..... ***M. advena***
– Smaller (total length 3.90–5.40 mm), with transverse basal spots (Figs 3b, c, 10b, c); pronotum in larger specimens much narrower (Fig. 3d); mainly from coastal regions extending from Kenya to KwaZulu-Natal..... **10**

10 Smallest species of the group (total length 3.90–4.90 mm), pronotum broad (pronotal length to width 0.63–0.68; Fig. 10e), elytra with small transverse (Fig. 10b) or triangular (Fig. 10c) sub apical spot, median lobe slender, with blunt apex (Fig. 10h–m) ..... ***M. didyma***
– On average larger (total length 4.10–5.40 mm), pronotum slender, lateral margins slightly sigmoidal (pronotal length to width 0.69–0.74; Fig. 2d), each elytron usually with two sub apical spots (Fig. 3b, c) that can rarely be absent, median lobe broad, widening sub apically (Fig. 3g–i) ..... ***M. trivialis***

11 Pronotum yellow to yellowish-red, rarely with median spot, triangle or stripe (Figs 2e, 7e, 8b) **12**
– Pronotum red with two latero-discal black patches (Fig. 9b); restricted to the Albertine Rift, Uganda and western Kenya ..... ***M. sulcata***

12 Largest species of the group (total length 5.00–7.20 mm), third antennomere very elongate (length of second to third antennomere 0.53–0.66; Fig. 6e, f); black colouration on elytra at humerus, in the apical third and also at the elytral apex (Fig. 6b), in specimens with a broad sub apical transverse band these can be enlarged (Fig. 6c); interrupted transverse pronotal depression distinct; from Cameroon and Congo basin ..... ***M. mertensi***
–On average smaller (total length 4.30–5.90 mm), third antennomere relatively short (length of second to third antennomere 0.64–0.85); black anterior elytral colouration more robust (Figs 2c–e, 7c–e, 8b, c), interrupted transverse pronotal depression less distinct; three species with high overlap in morphological characters that can be only distinguished by male genital pattern **13**

13 Pronotum on average broader (pronotal length to width 0.63–0.68; Fig. 2f), median lobe with bluntly rounded apex (Fig. 2i–n); distributed virtually throughout the Afrotropical region ..... ***M. duplicata***
– Pronotum on average narrower (pronotal length to width 0.66–0.74; Figs 7f, 8d), median lobe pointed apically (Figs 7i–n, 8g–i) **14**

14 Median lobe slender, nearly parallel-sided (Fig. 7i–n); known from West, Central and East Africa ..... ***M. thomsoni***
– Median lobe widening distinctly at base and apex (Fig. 8g–i; known from South Africa northwards to the southern Democratic Republic of the Congo ..... ***M. centromaculata***

15 Fourth to eighth antennomeres black in contrast with those at base and apex of antenna which are pale yellow (Fig. 5a); found in Equatorial Guinea, Gabon and Cameroon ..... ***M. horni***
– Fourth to eighth antennomeres yellow..... **16**

16 Median lobe bluntly rounded apically (Figs 2i–n, 4h–j, 10h–j)..... **17**
– Median lobe pointed apically (Figs 3g–i, 7i–n, 8g–I, 10k–m)..... **19**

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17 On average smaller (total length 3.90–4.90 mm), fourth antennomere short (length of third to fourth antennomere 0.67–0.77; Fig. 10f, g), median lobe short, parallel-sided (Fig. 10h–j), in large specimens slightly enlarged sub apically (Fig. 10k–m), but always bluntly rounded; found in the coastal regions from Kenya to KwaZulu-Natal ..... ***M. didyma***

– On average larger (total length 4.30–6.70 mm), fourth antennomere longer (length of third to fourth antennomere 0.54–0.65), median lobe short more elongated (Figs 2i–n, 4h–j) **18**

18 On average smaller (total length 4.30–5.50 mm), pronotum narrower (pronotal length to width 0.63–0.68; Fig. 2f), median lobe very slender, slightly conical at apex (Fig. 2i–k) often narrowing sub apically in small specimens (Fig. 2l–n); nearly pan-Afrotropical ..... ***M. duplicata***

– On average larger (total length 5.00–6.70 mm), pronotum very broad (pronotal length to width 0.57–0.66; Fig. 4e), median lobe broad (Fig. 4h–j); only known from montane regions in Kenya and northern Tanzania ..... ***M. advena***

19 On average larger (total length 5.00–7.20 mm), pronotum very broad (pronotal length to width 0.58–0.68; Fig. 6d), third antennomere elongate (length of second to third antennomere 0.53–0.66; Fig. 6e, f), transverse interrupted pronotal depression distinct, endophallus with many slender spiculae (Fig. 6g–i); known from Cameroon and the Congo basin ..... ***M. mertensi***

– On average smaller (total length 4.10–6.00 mm), pronotum not as broad (pronotal length to width 0.66–0.74), third antennomere relatively short (length of second to third antennomere 0.64–0.88), interrupted transverse pronotal depression indistinct..... **20**

20 Median lobe parallel-sided (Fig. 7m, n) or slightly enlarged pre apically (Fig. 7i–l); distributed in West, Central and East Africa ..... ***M. thomsoni***

– Median lobe distinctly enlarged pre apically and in the basal quarter (Figs 3g–i, 8g–i) **21**

21 On average smaller, pronotum very narrow (pronotal length to width 0.69–0.74) with slightly sigmoidal lateral margins (Fig. 3d), median lobe narrower, with one pair of robust spiculae (Fig. 3g–i); distributed mainly in the coastal regions from Kenya to Mozambique, and in Zimbabwe ..... ***M. trivialis***

– On average larger, pronotum broad (pronotal length to width 0.67–0.71), more transverse (Fig. 8d), median lobe very broad, with several slender spiculae (Fig. 8g–i); distributed from southern Africa northwards to the southern Democratic Republic of the Congo ..... ***M. centromaculata***

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The preimaginal stages of *Striphnopteryx edulis* (Boisduval, 1847) (Lepidoptera: Eupterotidae)

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Abstract. The eggs, all larval instars and the pupa of *Striphnopteryx edulis* (Boisduval, 1847), the type and only species of the southern African eupterotid genus *Striphnopteryx* Wallengren, 1858, are described and illustrated, including the chaetotaxy of the first-instar larva. The salient characters of the larva and pupa are briefly compared with those of a few Asian genera of the family.

Key words. Eupterotidae, Striphnopteryginae, *S. edulis*, egg, larval instars, chaetotaxy, pupa.

INTRODUCTION

Striphnopteryx edulis (Boisduval, 1847) (Figs 1–6) is a large southern African species of Eupterotidae (monkey-moths) and the type and only species of *Striphnopteryx* Wallengren, 1858, the type genus of the subfamily Striphnopteryginae Wallengren, 1858, which currently includes 15 genera (Nässig & Oberprieler, 2008). *Striphnopteryx edulis* occurs from the south-eastern parts of South Africa north into Mozambique and eastern Zimbabwe (Pinhey, 1975) and is rather common in KwaZulu-Natal. No authentic descriptions or illustrations of its larva have been published, Boisduval's (1847: 600) account in the original description of the species "La chenille de ce grand *Bombyx* vit en societé sur un arbre des environs de Port-Natal; elle est noire, marqué de taches rouges. Les Cafres la mangent après l'avoir fait griller; c'est ce qui a fait donner à cette espèce le nom d'*Edulis*" evidently referring to the gregarious larvae of a species of Saturniidae, which are often eaten by local people there. The literature (Platt, 1921; Pinhey, 1975; Kroon, 1999) does, however, record both native and introduced host plants for the larva of *S. edulis* in South Africa, respectively *Cordia caffra* (Boraginaceae), *Tecoma capensis* (Bignoniaceae), *Acacia mearnsii* (Fabaceae) and *Bougainvillea* (Nyctaginaceae).

This paper describes and illustrates the egg, larva and pupa of *S. edulis*, including the chaetotaxy of the first-instar larva, from material reared in Germany from eggs obtained from a gravid female collected in South Africa. The descriptions enable a comparison of the immature stages of this taxon with those of a few Asian genera of Eupterotidae and thus contribute characters to an eventual reconstruction of phylogenetic relationships within the family.

MATERIAL AND METHODS

A gravid female of *S. edulis* was collected at light on 11 April 2007 by V. V. Z. in the Republic of South Africa, in the Ramsgate Butterfly Sanctuary (30°53'S 30°20'E, 45 m a. s. l.) located in the province of KwaZulu-Natal. Identification of the species was made by comparison with the holotype (Fig. 3) housed in The Natural History Museum, London, United Kingdom. From eggs laid by this female, larvae were reared on *Convolvulus* and *Calystegia* (both Convolvulaceae) to pupation in captivity in Germany by D. S. The morphological study of the preimaginal stages, including the illustrations, was carried out by S. N. P.

For the study of the chaetotaxy of the first-instar larva, specimens were preserved in 70–80% ethanol and cut longitudinally for rapid maceration (15–20 min) in 10% NaOH solution in a double-boiler. The head capsule was cut from the body using micro-scissors and the skin cleaned from tissues using a micro-brush. The skin was then washed in hot water and dehydrated and hardened with ethanol (sequentially through concentrations of 50%, 80% and 96%) before mounting in Euparal on a glass-slide under a cover-glass. The head capsule was treated in the same way, except that the cover-glass was supported by small pieces of glass to avoid undue pressure and distortion. Mandibles, labrum and labio-maxillary complex (Figs 25, 29, 30) were dissected from the head capsule and studied and preserved separately. Three first-instar larvae were subjected to this procedure.

The preparations were studied under a light-microscope and photographed using a Canon PowerShot A570 and an Olympus Camedia C-750 camera. Images were processed using Adobe Photoshop 7.0, and colour plates were prepared from scanned analogue and digital photographs using CorelPhotoPaint X3.

In the chaetotaxy of the larva, the nomenclature of Hinton (1946) is followed.

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Figs 1–6. Habitus of *Striphnopteryx edulis* adults. **1**. male, South Africa, KwaZulu-Natal, Ramsgate Butterfly Sanctuary, reared specimen, upperside; **2**. ditto, underside; **3**. holotype male, BMNH; **4**. female, same data as 1, reared specimen, upperside; **5**. same male as in 1), newly eclosed, in resting posture; **6**. dark male, Zimbabwe (photo: Bart Wursten). (scale bar 10 mm).

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Figs 7–22. Preimaginal stages of *Striphnopteryx edulis*. **7**. eggs; **8**. L1 shortly after hatching; **9**. L1 after feeding; **10**. anterior part of L1 in pre-moulting phase, showing bulging pronotal shield; **11**. L2 fixed in ethanol; dorsal, lateral and ventral views; **12–13.** L2; lateral and dorsal views; **14**. L3; **15**. L4; **16**. L5; **17**. L6; **18**. head of L6, frontal view; **19**. cocoon; **20**. pupa after eclosion; dorsal, ventral (head shield only) and lateral views; **21**. caudal end of pupa, ventral view, showing densely denticulate apex; **22**. same, less enlarged.

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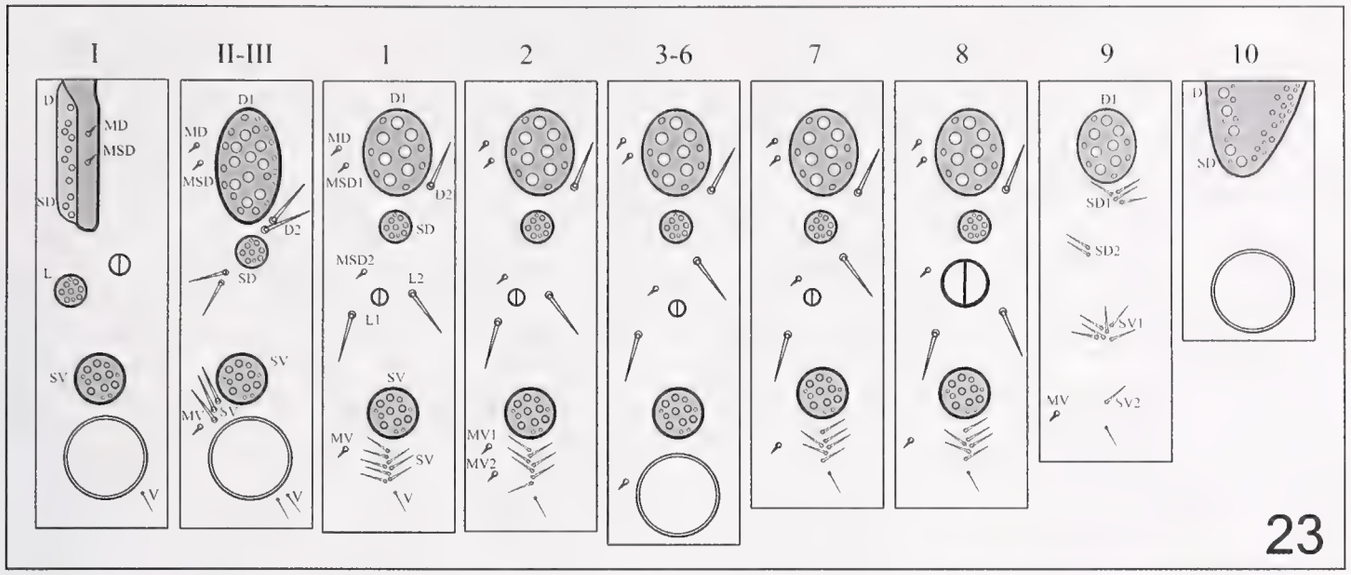

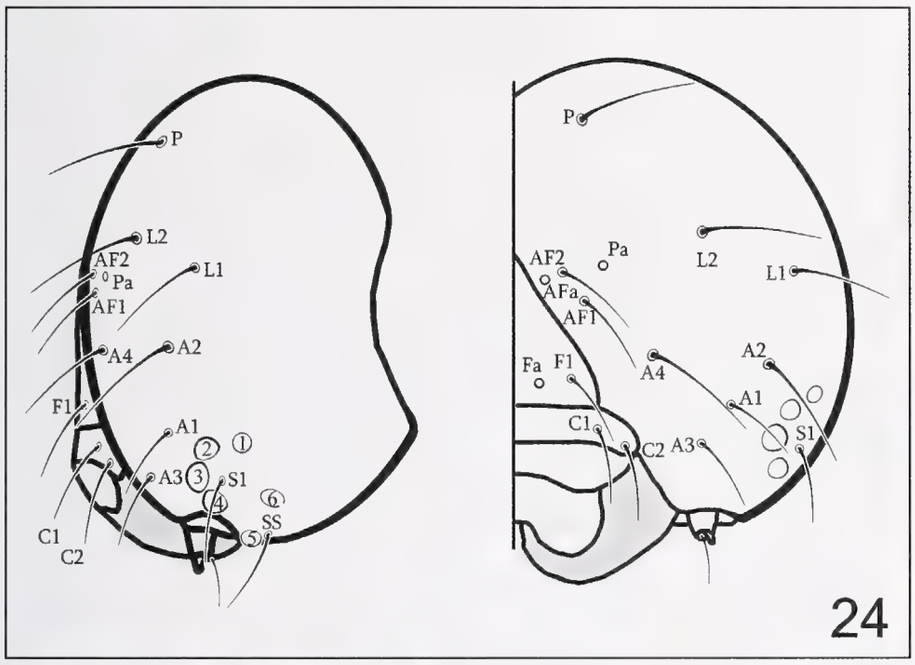

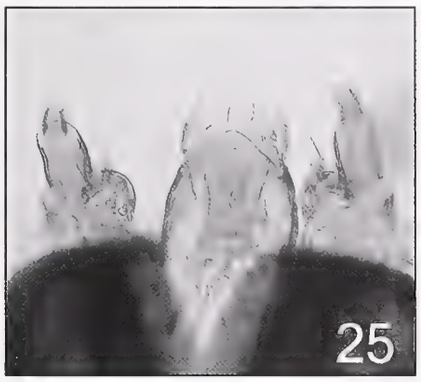

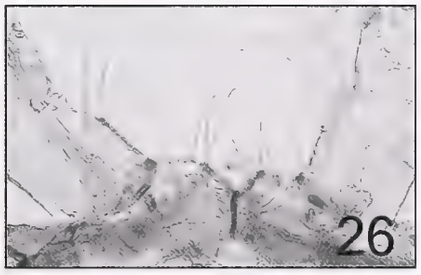

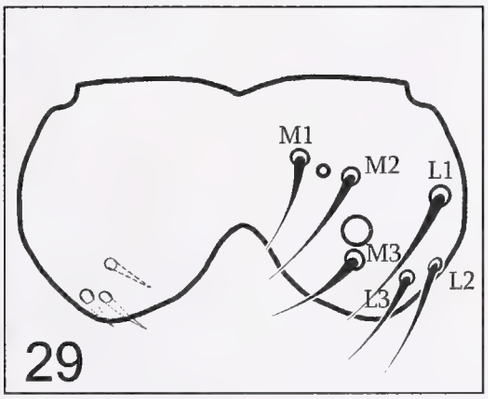

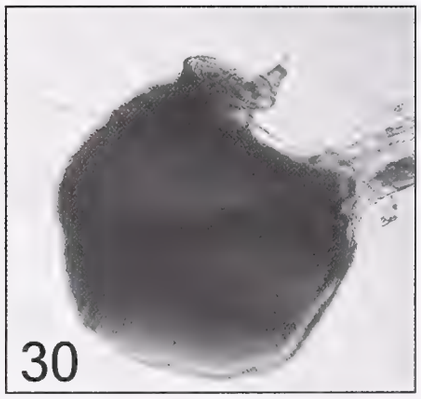

Figs 23–30. Structural details of *Striphnopteryx edulis*, L1. **23**. setal map of body segments; **24**. setal arrangement on head; **25**. labio-maxillary complex; **26**. fore legs showing fused coxae; **27**. plumose (?subprimary) seta; **28**. base of seta; **29**. setal arrangement on labrum; **30**. mandible.

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Description of immature stages

Egg (Fig. 7). Hemispherical, of upright type, about 2.5 mm in diameter, dark yellow without distinct pattern, with flattened base, the micropyle situated in a small depression at the dorsal pole.

Larva. First instar (Figs 8–10) 5–9 mm long, with very long, white, pinnate primary setae; head (Fig. 24) shining dark brown to black with pale area around border of eyes and white vertex, orthognathous, hemispherical, without processes, vertex with small but distinct depression, frontal suture longer than that of vertex (epicranial index 0.76); ventral side of body greyish-white, dorsally and laterally dark grey, dorsally with a narrow, white median line interrupted at intersegmental borders, laterally with a somewhat weaker but otherwise similar line; pronotum narrow, black, transverse (Fig. 10); thoracic legs greyish-white. Second, third and fourth instars (Figs 11–15) dark brown dorsally and laterally, yellowish-brown ventrally; dorsal and lateral longitudinal lines bright yellowish-brown in 2nd but less distinct in 3rd and 4th instars (Figs 14–15); head shining reddish-brown with black frontal band, pronotum reddish; ventral surface darker reddish-brown; thoracic legs brown, prolegs pale reddish-brown; body densely covered with long, reddish, stiff, urticating setae grouped in sparse tufts, interspersed with longer, finer, ash-grey hairs. Penultimate (L5) and final instars (L6; Figs 16–18) dark brown, covered with long ash-grey hairs interspersed with abundant reddish- to dark brown, shorter urticating setae; head (Fig. 18), legs and prolegs reddish brown; hairs not grouped in tufts as in most other eupterotid genera but forming transverse bands. Procoxae connate at base (Fig. 26).

Pupa (Figs 20–22, 31). Subcylindrical, anteriorly and posteriorly rounded, 35–37 mm long, blackish-brown, surface shining; frontal shield elongate teardrop-shaped; mandibular sheaths very small and indistinct; sheaths of maxillary palps reaching fusion line between antennal sheaths, sheaths of fore and middle legs not touching distally, the former almost reaching distal parts of sheaths of maxillary palps; the latter 0.8x as long as those of forelegs; wing sheaths smooth and glossy but with fine transverse striae; abdominal segments also striate in posterior half, anterior half covered with small round depressions enlarged at intersegmental region; cremaster absent but apical surface densely denticulate (Figs 21–22), covered by larval skin inside dense, hairy and spiny cocoon (Fig. 19) spun under leaf litter on soil surface.

Chaetotaxy of first-instar larva

Head (Fig. 24): Frontal seta F1 slightly above pore Fa; AF2 and AF1 along upper half of frontal suture, AF2 slightly above AF1; clypeal setae C1 and C2 in typical position; setae of fore group (A1–A4): A3 above antenna, drawn level with C2, A4 near epicranial suture opposite to seta F1, A1 at most equidistant between A2 and A3, all three forming a direct line, A1 above stemma 3, level with A2; lateral seta L1 above stemma 4, level with AF2, L2 above antenna, level with apex of vertex; pore Pa near seta AF2, on line with AFa and AF2; single seta of the stemma group (S1) above stemma 4; SS1 behind stemma 5. Stemmata 2–4 arranged in regular semicircle, and 1 and 5 slightly apart from them, all similarly pigmented and apparently functional. Labrum (Fig. 29) generally rounded, anterior margin with deep median notch, with standard set of setae: M group forming a triangle, M1 near midline, equidistant between upper and lower margins, small pore between M1 and M2 and larger one between M2 and M3; L2 near lateral margin, close to L3. Mandibles (Fig. 30) adentate, molar surface excavate, with concave edge, with two setae, the larger one twice as long and more basal. Body (Fig. 23): Setae dimorph, either stout, long, needle-shaped or fine, long, hair-like; generally situated on sclerotized verrucae or smaller shields, stout ones in centre and fine elastic ones at periphery; subprimary setae thin, elastic and plumose (Fig. 27); bases of primary setae in deep sockets (Fig. 28).

D-group. D1 and D2 on T1 on pronotal shield but completely obscured by subprimary setae; on T2–T3 and A1–8, D1 on large spherical verruca with numerous subprimary setae; D2 isolated, closely behind D1 verruca but on D1 verruca on A9, double on T2–T3; on A10 together with SD group on triangular anal shield, anteriorly mostly shorter, thick, but caudally longer, finer.

SD-group. On T1 on pronotal shield together with D; on T2–3 and A1–8 on small spherical verruca together with numerous subprimary setae; on A9 arranged into two clusters, upper SD1 comprising 3–4 setae below D verruca and lower SD2 setae. On A10 together with D-group on the triangular anal shield.

L-group. On T1 on small spherical verruca together with numerous subprimary setae; on T2–3 two separate setae near SD verruca; on A1–2 also two separate setae, L1 anteroventrally and L2 posterodorsally of spiracle; similar on A3–7 but more widely spaced; on A8 both L1 and L2 below spiracle, which is almost 4x larger than on other segments; on A10 absent.

SV-group. On T1 on large verruca with numerous subprimary setae, directly above procoxa; on T2–T3 on similar verruca but with some small subprimary setae between verruca and coxa; on A1–2 and A7–8 in similar arrangement; on A3–A6 on verruca together with some subprimary setae; on A9 arranged in cluster together with some subprimary setae but not on verruca, except a single SV2 lower, close to V-seta; on A10 absent.

V-group. Single V seta on each side of T1–T3, A1–A2 and A7–A9 in standard position; on T2–3 sometimes double seta; on A3–A6 and A10 absent.

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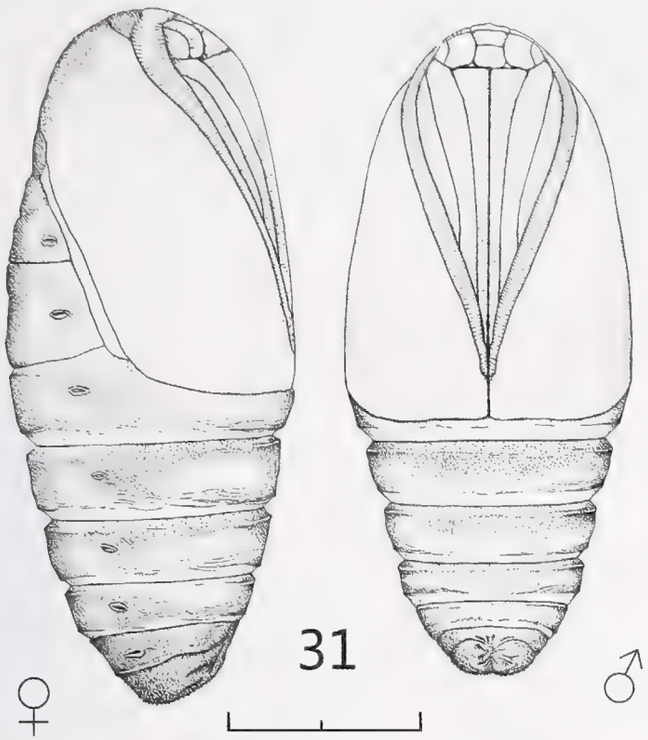

Fig. 31. Pupa of *Striphnopteryx edulis*, lateral (female) and ventral (male) views (scale bar 10 mm).

Some very short micro-setae are also present: mD (MD) and mSD (MSD) close together in front of D1 on T2–T3 and A1–A8, on A1–A8 mSD2 anterodorsally of spiracle; mV group below SV, on T2–T3 in front of coxa, on A1, A2 and A7–A9 in front of SV, on A2 double, on A3–A6 in front of prolegs.

DISCUSSION

As typical of the family, the procoxae of the larva are connate. Lemaire & Minet (1999: 330) considered this character as an autapomorphy of the family, but Oberprieler et al. (2003: 109) reported free procoxae to occur in some genera of the *Phiala* section of Striphnopteryginae. The insertion of the primary setae in deep sockets (Fig. 28) appears to be an unusual and perhaps phylogenetically significant character, as it also occurs in other eupterotid genera studied (*Apha* Walker, 1856, *Palirisa* Moore, 1884, *Pseudojana* Hampson, 1893, *Hoplojana* Aurivillius, 1901). However, the insertion of the primary setae needs to be studied more closely in other eupterotid genera and also in other bombycoid families.

Some other characters possibly can be considered diagnostic for the genus *Striphnopteryx:* in the larva, the molar surface of the mandible is shovel-shaped and untoothed; the SV-verrucae on segments A3–6 are well developed (contrary to the condition in *Pseudojana incandescens* – see Pugaev & Zolotuhin 2011); the bases of SD-setae are transformed into strong, sclerotized verrucae with a large number of subprimary setae (in *Palirisa* – see Pugaev & Thieu, 2011 – and in *Pseudojana* they are represented by a single strong seta only); all groups of setae have subprimary setae admixed; in the pupa, a typical cremaster is absent, but the terminal segments of the abdomen are densely denticulate (as in *Pseudojana incandescens*; in *Palirisa salex* hooked cremastral setae are present); the mandible sheaths are small and indistinct; and the sheaths of the maxillary palps reach the fusion line between the antennal sheaths (in *Pseudojana* the antennal sheaths do not touch each other distally).

Some of these characters, as well as others not mentioned above, may possibly prove to be suitable to distinguish Striphnopteryginae from the (probably closely related) Eupterotinae, but this remains speculative until the immature stages of many more genera are carefully studied and compared.

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On dragonfly nymphs (Insecta: Odonata: Anisoptera) from the caldera of the Cerro Azul volcano, Isla Isabela (Galápagos Archipelago, Ecuador)

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Abstract. We describe nymphs of the spot-winged glider, *Pantala hymenaea*, encountered during an expedition to the caldera of the Cerro Azul volcano on Isabela island in February 2009. This faunistic shortnote provides the first species-level identification of odonates from a caldera lake of an active Galápagos volcano.

Zusammenfassung. Wir berichten über den Fund von Nymphen der Großlibelle *Pantala hymenaea* bei einer Expedition in die Caldera des Cerro Azul Vulkans auf der Insel Isabela im Februar 2009. Diese faunistische Kurzmitteilung ist der erste Nachweis von Libellen auf Artniveau aus einem Caldera See eines aktiven Galápagos Vulkans.

Key words. Caldera lake, Chironomidae, *Chironomus*, faunistics, Galápagos Islands, Libellulidae, *Pantala hymenaea.*

The odonate fauna on Galápagos is far less diverse compared to continental South America as freshwater bodies are scarce on the islands. However, adult dragonflies and damselflies (Insecta: Odonata: Anisoptera + Zygoptera) are frequently encountered and nymphs can be found in several temporary pools. Nevertheless, detailed faunistic data documenting the presence or absence of nymphs in the various water bodies are lacking (Peck 1992, 2001). For the caldera lakes of the archipelago's active volcanoes, there are only two rather anecdotal reports. Eibl-Eibesfeld (1961, cited after Peck 1992) observed nymphs in the caldera lake on Fernandina island, but gave no identification of the species. Furthermore, two unidentified aeshnid (Anisoptera: Aeshnidae) and libellulid (Anisoptera: Libellulidae) species were mentioned by Muschiol & Traunspurger (2009), endorsing Peck's (1992, 2001) speculation that nymphs could also live in the caldera of Cerro Azul on Isabela island. Here we present the first species-level identification of odonate nymphs from the caldera of this active volcano.

Located in the southwestern part of Isabela island, Cerro Azul is the second highest volcano on the Galápagos Archipelago (approximately 1690 m in elevation) and its summit is dominated by an elliptic caldera (Banfield et al. 1956). In the caldera, there are several temporary lakes, but they have been subject of only scant attention (see Table 1 for a summary of both published and previously unpublished data on these lakes). As a consequence, only a single study (focusing on the meiofauna) of their aquatic organisms is available, that of Muschiol & Traunspurger (2009). One particular lake, Cone Lake, using the name introduced by the latter authors, is about 300 m in diameter and located within a tuff cone at about 1160 m above sea level, in the caldera's northeastern corner (Fig. 1). Cerro Azul was active from May 29th and continuing through June 2008 (Smithsonian Institution 2008), about five years after the first biological data were collected, resulting in the burial or drying out of two of the lakes present in 2003. However, Cone Lake persisted and its macrobenthos was examined qualitatively in the present study.

We ascended to the summit on February 17, 2009 and reached Cone Lake during the morning of the following day. During our survey in 2009, the lake's water line, as indicated by the more prominently protruding islets (Fig. 2), appeared to be approximately two meters lower than in 2003 (see Muschiol & Traunspurger 2009: fig. 1). Samples were taken from the shore with a handheld sieve at ten sites located relatively equidistant from each other. The collected specimens were stored in 70% ethanol and examined using a dissecting microscope.

Dragonfly nymphs were captured at all ten sites. The 42 collected specimens ranged from 3 to 24 mm in size and belonged to a single species. In accordance with the key provided by House (2001) as a taxonomic reference, all nymphs were classified as Libellulidae (Insecta: Odonata), because of their spoon-shaped prementum. The

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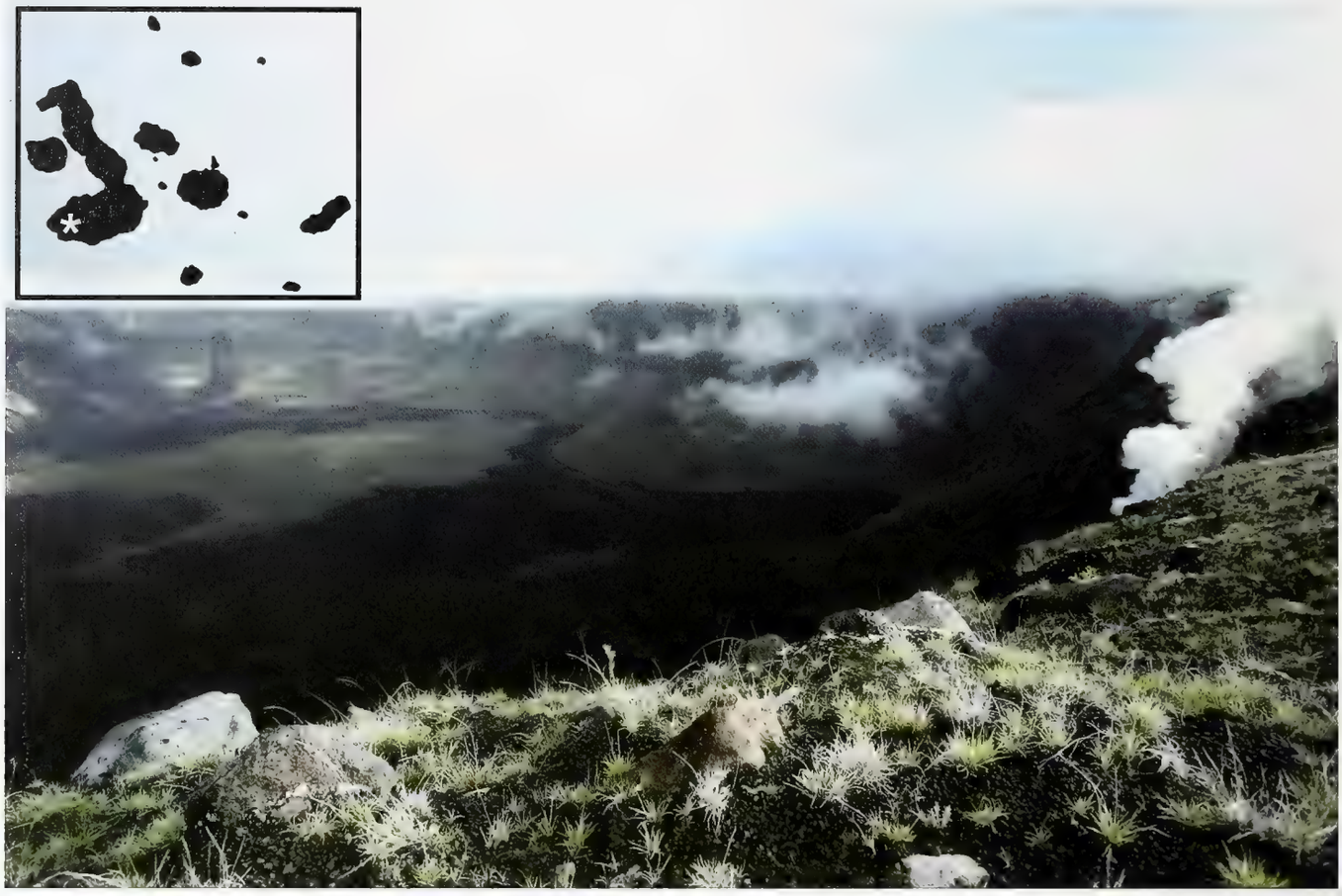

Figs 1. The caldera of the Cerro Azul volcano. View from its rim in north-eastern direction with Cone Lake in the center of the photo. Note the massive black lava field on the caldera's floor and the protective tuff cone harboring the lake. The white asterisk on the silhouette of the archipelago in the upper left corner indicates its geographic location. Photo: M. Lambertz.

absence of dorsal hooks on their abdominal segments, an epiproct not shorter than the paraprocts and lateral spines of the 9th abdominal segment not extending as far as the tips of the cerci formed the basis of further assignment of these nymphs to the genus *Pantala* Hagen, 1861. A slightly downward curved epiproct and a base of the lateral spine of the 9th abdominal segment larger than one third of its length confirmed the nymphs as belonging to the species *Pantala hymenaea* (Say, 1839).

This species, the spot-winged glider, shows a wide distribution ranging south from southern Argentina northwards to southern Canada, with occasional reports even from Alaska (Paulsen 2009). It has also been reported on Isabela island, where it is known to breed in temporary pools including brackish water habitats (Peck 1992, 2001). This, at least for odonates, highly unusual physiological tolerance is shared by most of the species found on the archipelago (Peck 2001) and may explain its presence as well in habitats like Cone Lake with its rather extreme water chemistry (see Muschiol & Traunspurger 2009 for details).

During the survey at Cone Lake, we also encountered several adult dragonflies around the lake, but were unable to catch one and thus cannot provide a reliable identification. Besides the odonates, individuals belonging to at least two species of chironomid larvae (Insecta: Diptera: Chironomidae) were observed during a qualitative macroscopic examination of the benthos. Based on mentum morphology and the relative position of the ventromental plates (see Ferrington et al. 2008: fig. 26.186), some of them could be assigned to the genus *Chironomus* Meigen, 1803, while others remained unidentified. Chironomids are known to occur in virtually every type of aquatic habitat (Pinder 1995) and are suitable and attractive prey for nymphs of the spot-winged glider (Quiroz-Martínez et al. 2005).

The fate of the aeshnid species noted in 2003 by Muschiol & Traunspurger (2009) is unclear. That the absence of this species in our most-recent sample from 2009 is a consequence of the latest eruptions in 2008 remains speculative. Moreover, it is uncertain whether *P. hymenaea* is indeed the unidentified libellulid species reported in that

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Figs 2. Cone Lake from within the tuff cone. The degree of visibility of the cone-shaped islet in the center can be used to estimate the lake's water level. View is in western direction. Photo: M. Lambertz.

earlier study, although this appears to be the case. Nevertheless, as data on the odonate fauna of the archipelago are very scarce, especially regarding their potential presence in the various water bodies, our report contributes to the documentation of both the islands' and this species' natural history.

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APPENDIX

Table 1. Summary of published and unpublished data on lakes in the caldera of the Cerro Azul volcano.

Date	Cone Lake present	Main Lake present	Source	Comments
1946	no	no	McBirney & Williams 1969	Due to the presence of the tuff cone at that time and the formation processes of such cones (Simkin 1984), it can be assumed that water had been temporarily present within the caldera prior to 1946.
December 1972	no	no	T De Roy, Golden Bay, pers. comm. 2011	
April 1974	no	no	T De Roy, Golden Bay, pers. comm. 2011	
early 1980	no	no	T De Roy, Golden Bay, pers. comm. 2011	
June 1983	yes	yes	T De Roy, Golden Bay, pers. comm. 2011	A huge El Niño event affected the Galápagos between December 1982 and July 1983 (Jackson 1993).
1988/89	?	yes	Munro & Rowland 1996	On the SPOT image (fig. 6a), even though not entirely unambiguous, there appears to be water also in the tuff cone.
1991	yes	yes	Naumann & Geist 2000	
summer 1993	yes	yes	Naumann & Geist 2000	
summer 1995	yes	no	Naumann & Geist 2000	
1998	yes	yes	Naumann & Geist 2000	Cone Lake was nearly full.
June 1998	yes	yes	M Lang, Washington, DC, pers. comm. 2011	Confirmation of a relatively high water level for Cone Lake.
February 2003	yes	yes	Muschiol & Traunspurger 2009	A small "Side Lake" was isolated from the Main Lake.
June 2008	yes	no	T De Roy, Golden Bay, pers. comm. 2011	Cerro Azul was active at that time. The water level of Cone Lake was lower than in 2003.
February 2009	yes	no	this study	The water level of Cone Lake was comparable to that in 2008.

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Records of the exotic damselfly *Ischnura senegalensis* (Rambur, 1842) from Bonn (Germany)

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Abstract. We report on specimens of the damselfly *Ischnura senegalensis* (Odonata: Zygoptera: Coenagrionidae) accidentally introduced to western Germany. The odonates were encountered in Bonn and their origin could clearly be correlated with commercially distributed exotic aquarium plants.

Zusammenfassung. Wir berichten über Exemplare der Kleinlibelle *Ischnura senegalensis* (Odonata: Zygoptera: Coenagrionidae), die irrtümlich nach Westdeutschland verschleppt wurden. Die Libellen wurden in der Stadt Bonn gefunden und ihre Herkunft konnte zweifelsfrei mit kommerziell erhältlichen exotischen Aquarienpflanzen in Verbindung gebracht werden.

Key words. Anthropogenic dispersal, Coenagrionidae, globalization, North Rhine-Westfalia, Odonata, Zygoptera.

The Marsh or Senegal Bluetail, *Ischnura senegalensis* (Rambur, 1842), is a common member of the Coenagrionidae (Odonata: Zygoptera). Its natural distribution ranges mainly through an old world tropical and subtropical belt south of about 35°N from Africa to Japan (Askew 2004; Shama 2010). This species occurs in a variety of habitats and is tolerant of disturbances and pollution and therefore assessed as of Least Concern (Shama 2010). The N-most native occurrences in countries adjacent to Europe are in Algeria, Egypt, Iran, Iraq, Israel, Jordan and the Palestinian territories (Shama 2010). However, there are three isolated published reports of this species far outside its natural range. These are from S Finland (Valtonen 1985), S Great Britain (Brooks 1988) and E Germany (Kipping 2006), and could all be correlated with imported exotic aquatic plants.

On May 13, 2011 one of us (HS) encountered a living damselfly in his bathroom (Theodor-Brinkmann-Straße, 53115 Bonn, Germany) (Fig. 1). A first attempt to identify this specimen with standard literature for central Europe (Dijkstra & Lewington 2006) allowed to assign it only up to *Ischnura* Charpentier, 1840.

So far, there have been records for only two species of this genus from around Bonn: *I. elegans* (Vander Linden, 1820) and, although rare, *I. pumilio* (Charpentier, 1825) (le Roi 1915; Buchholz 1950; Schmidt 1990). Consulting Belle & Tol (1990) and Samways (2008) finally revealed – based on the the shape of the pronotum and the markings of S2 and S7-10 – that the present specimen is a male of *I. senegalensis*. As already mentioned, this is primarily a tropical and subtropical species. The only explanation for its occurrence in this part of Europe was, especially in light of the previously reported irregular records, the aquarium in the hallway of the apartment. A subsequent control of that aquarium and its plants indeed revealed the respective exuvia and another, but dead, larva of this species (Fig. 2). These vouchers are deposited in the odonate collection of the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK no. pending).

The aquarium, with a capacity of 54 l, had been set up in early April 2011 and the average water temperature was kept at approximately 23,5°C. Until the discovery of the damselfly there had not been any fish in the aquarium as it was used as a backup basin for an ongoing experiment on sound production in fish. There were only three species of plants in the aquarium, one of which (*Ludwigia repens* J.R. Forst) belongs to a genus which has been reported as a suitable microhabitat for coenagrionid larvae in general, and *I. senegalensis* in particular (Osawa & Katsuno 2003).

The plants were bought all together from a local pet store (Fressnapf Bonn-Endenich, Immenburgstraße 38, 53121 Bonn, Germany) in the second week of April 2011. Due to multiple and also changing wholesalers for this store, it was impossible to determine the exact origin of the plants. However, consultation of the store's fishkeeping department revealed that there had been isolated reports of unidentified odonate larvae in the past.

The herein described mode of dispersal for *I. senegalensis*, as being caused by imported aquarium plants, is in

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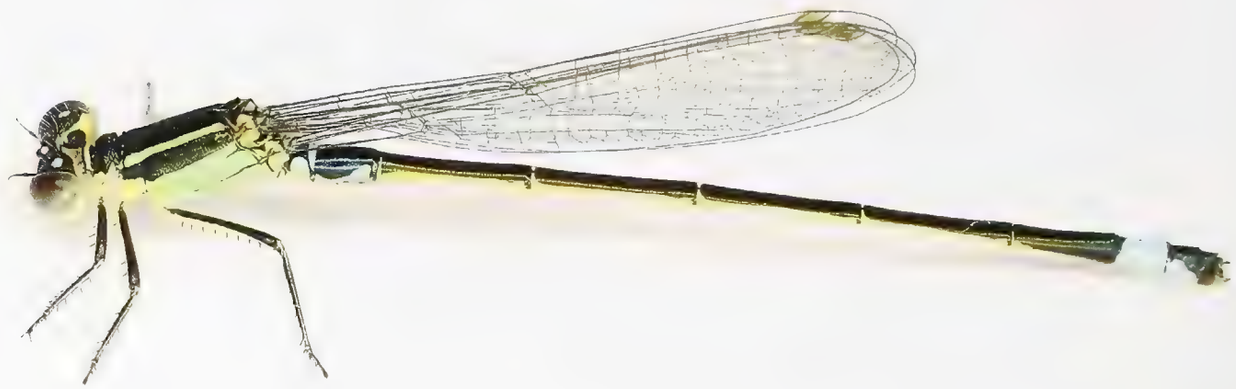
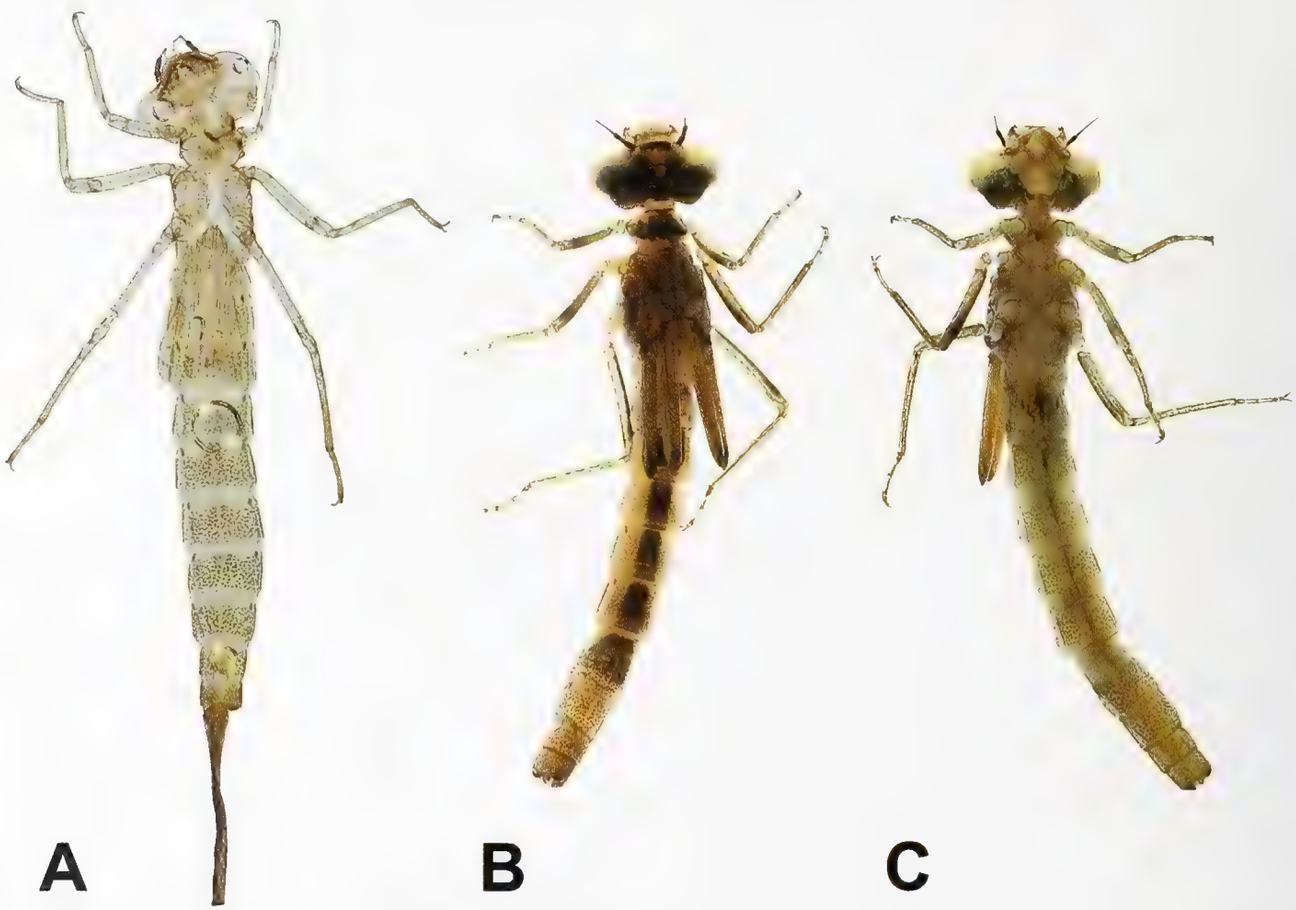


Figs 1. The voucher of *Ischnura senegalensis* (male, in live) from Bonn, Germany (ZFMK no. pending). Photograph: M. Lambertz.



Figs 2. Exuvia from ventral (A) and larva from dorsal (B) and ventral (C) of *Ischnura senegalensis* from Bonn, Germany (ZFMK no. pending). Photographs: M. Lambertz.

complete agreement with the previous reports from Europe (Valtonen 1985; Brooks 1988; Kipping 2006). In an earlier study from Bonn, Schmidt (1990) also reports on unidentified specimens of *Ischnura* from the greenhouse in the botanical garden, which were assumed to have been imported together with aquatic plants from Cameroon. Nevertheless, this is the first verified record of *I. senegalensis* from W Germany, the second for entire Germany and the fourth for central and N Europe.

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Fortunately, there are yet no indications that such accidentally imported tropical and subtropical odonates have survived in the wild in Europe (Dijkstra & Lewington 2006; Kipping 2006). Conze et al. (2010), however, have considered the increasing average temperatures due to recent climatic change as the main reason for an increased spread of thermophilous dragonflies in North Rhine-Westfalia. Similar reports for a temperature dependent invasion of odonates exist for other parts of Germany and Europe as well (Goffart 2010; Knijf & Anselin 2010; Termaat et al. 2010; Ott 2010). Also for Bonn, there is a conspicuous increase in average temperature evident (SBASW 2002) and there is at least one attractive breeding place for odonates within the city limits (Schmidt 1990), only in about 1 km linear distance from the present record of this potentially invasive species.

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Synonymy and nomenclatural history of the Common or Viviparous Lizard, by this time: *Zootoca vivipara* (Lichtenstein, 1823)

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Abstract. We carefully reread and translated the Latin account by J.F. von Jacquin (1787) on his description of a viviparous lizard ("Lacerta vivipara") in the Austrian Alps near Vienna. It turned out that – in contrast to common usage – this account cannot be regarded as the original description and scientific denomination of the taxon *Zootoca* (formerly *Lacerta*) *vivipara*. It is apparent that v. Jacquin did not at all intend to describe a new species, but just wanted to point on his extraordinary observation that the lizard observed by him gave birth to young instead of laying eggs (Latin: Lacerta vivipara = viviparous lizard). For securing nomenclatural stability of this well-known and widely distributed species, we had to search for the next, subsequent author using v. Jacquin's name in the sense of a taxonomic denomination. According to our extensive literature review, it was Lichtenstein (1823) who first used "Lacerta vivipara" as a species name (although he thought it to be a synonym of *Lacerta muralis*). In accordance with and to meet the standards of Article 11 of the International Code of Zoological Nomenclature (ICZN 1999), the common lizard has now to be named *Lacerta vivipara* Lichtenstein, 1823, or, according to current concepts, *Zootoca vivipara* (Lichtenstein, 1823).

Cocteau (1832) was the only earlier author who recognized that von Jacquin had no intention of describing a new species. He therefore named his lizard from Schneeberg / Austria "*Lacerta de Jacquin*" which has to be regarded as a replacement name (at least with respect to *Lacerta vivipara* Lichtenstein). Subsequently, Duméril & Bibron (1839) discussed the biological details of "*Lacerta vivipara*" given by Cocteau (1832), but omitted his nomenclatural findings completely, like all subsequent authors. Since then the common lizard was usually named "*Lacerta vivipara* de Jacquin, 1787", whereupon some older names before Lichtenstein's (1823) action were relegated into its synonymy.

The viviparous lizard was for a long time the hidden member of a voluminous collective species since early Linnean times (named *Lacerta agilis* by Linnaeus, 1758, or *Lacertus cinereus* by Lacepède, 1788 – and comprising at least additionally *Lacerta agilis* Linnaeus, 1768, *Lacerta viridis* Laurenti, 1768, and *Podarcis muralis* (Laurenti, 1768), in their current sense. On the other hand Wolf in Sturm (1805) and Mikan in Sturm (1805) had split the present-day *Zootoca vivipara* into three species later on .The discrepancy between several simultaneous lumping and splitting trends immensely complicated the development of nomenclature and systematics – not only in *Zootoca vivipara* (see Schmidtler, 2010) – up to the middle of the 19th century.

In this paper, we provide a detailed list of the names erected and described in connection with the common lizard and discuss and evaluate their nomenclatural availability. Some of the old nomina were rediscovered here and are rather curious examples from early post-Linnean times.

Key words. Squamata: Lacertidae: *Zootoca vivipara*; nomenclature, authorships, history of herpetology.

INTRODUCTION

The Common or viviparous lizard (*Lacerta* – now *Zootoca vivipara* auct.) is the most widespread terrestrial reptile in the world ranging from the Cantabrian mountains and Ireland in the west through the entire Eurasian landmass to Sakhalin Id. (Russia) and Hokkaido Id. (Japan) in the east, and from the Po valley (Italy) and South Bulgaria in the south to the Barents Sea in the north. But despite this huge range, this species was for long believed to be monotypic (see e.g. Wermuth 1951, Mertens & Wermuth 1960). However, more recent studies revealed considerable differences in physiology, natural history, karyology, and – most important – molecular genetics which resulted in the description and/or recognition of several subspecies, viz. *sachalinensis* Perelshin & Terentyev, 1963, *pannonica* Lac & Kluch, 1968, *carniolica* Mayer, Böhme, Tiedemann & Bischoff, 2000, and *louislantzi* Arribas, 2009 (see Dely & Böhme 1984, Kuprianova & Böhme 1997, Cabela et al. 2001, Mayer & Böhme 2000, Mayer et al. 2000, Odierna et al. 2000, 2004, Glandt 2001, Surget-Groba et al. 2001, Arribas 2009). Subsequently, it was even claimed that it would be possible (though still difficult) to define some of these taxa by external morphology (Clasen 2001, Guillaume et al., 2006, Arribas 2009).

Because of this new and earlier unexpected diversity in the above-mentioned parameters of this species it became

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important to define what *Zootoca* (or *Lacerta* respectively) *vivipara* actually is. To this end, a re-analysis of J.F. v. Jacquin's (1787) first description and a short biographical search about himself seemed useful as a first step. This first description of a viviparous lizard is a short account of one and a half pages published in Latin language in the "Annales Helveticae". It deals with an observation the author made when he was an eleven years old boy, accompanying his father, the famous botanist Nikolaus Josef von Jacquin, on a botanical excursion to the Schneeberg near Vienna in 1778. During this walk, Josef Franz happened to catch a female lizard, put it into a small box, looked after it again two days later and found six juveniles but no eggshells wherefore he drew the correct conclusion that these juveniles should have come to light directly from their mother's body. A first important point in respect to this article (written down nine years later, i.e. 1787) is that the term "Lacerta vivipara" (i.e. a viviparous lizard) is used only once, viz. in the title. The next mentioning of the animal, the first in the text, reads "Lacerta praegnans" (i.e. a pregnant lizard). But the statement given by the author at the end of his article, that he would never dare to state which species his lizard might belong to, makes definitely clear that "Lacerta vivipara" was not intended as a new scientific taxon name but only as a Latin term for the observed phenomenon of viviparity. If he would have written his account in German or any other language, the name *Lacerta vivipara* would never have been created at that time and would never have been ascribed to J.F. von Jacquin (see Cocteau 1835, Böhme & Rödder 2006, Schmidtler & Böhme 2006). This means, that *Lacerta vivipara* Jacquin, 1787 does not at all meet the criteria of Art. 11.5 of the International Code of Zoological Nomenclature (ICZN 1999) which states: "To be available, a name must be used as valid for a taxon when proposed".

We were aware that this discovery is suited to endanger the stability of the name *Zootoca vivipara* because the synonymy list is long and dates back to the early 19th century. Changing the name of this famous reptile would be catastrophic, not so much for herpeto-taxonomists (who are accustomed to such changes) but mainly for taxonomy-users such as physiologists, ecologists, conservationists etc., and the Code clearly states already in its preamble that stability and universality of scientific names is its uppermost objective, and the priority rule for example has to serve stability and not vice versa (ICZN 1999). It was therefore our first ambitious goal to solve the nomenclatural problems arising from the insight that Jacquin (1787) is not the author of this taxon. Hence we provide here a commented list of all synonyms or other names connected with *Zootoca vivipara*. Such a list is certainly of interest because it might well be possible that further refinement of the infraspecific structure of *Z. vivipara* and consequently further taxonomic splitting can happen. This should be facilitated when a sound nomenclatural basis is available. With this paper, we want to contribute to the creation of this basis by evaluating the complicated nomenclatural history of *Zootoca vivipara* which is more than 200 years old.

RESULTS

I. Synonymy list of *Zootoca vivipara*

In the following we give an as complete as possible commented list of names applied to *Z. vivipara* since von Jacquin's (1787) account. The year of description is followed by the name in its original spelling and by the type localitiy – if stated – likewise in the original spelling. Our comments are referred to numbered notes in the second paragraph of this chapter.

1830 *Zootoca* Wagler – Type species: "*Lacerta vivipara* Jacqu.". (Note 1)
1785 *Seps? atra* Schrank in Schrank & Moll – Berg Schwarzort bei Berchtesgaden. (Note 2)
1787 "Lacerta vivipara" Jacquin – "In monte Schneeberg". (Note 3)
1788 *Lacertus cinereus* Lacépède – (Note 4)
1804 *Lacerta oedura* Sheppard – "At different times found in vast abundance". (Note 5)
1805 *Lacerta montana* Mikan in Sturm – "Riesengebirg". (Note 6)
1805 *Lacerta nigra* Wolf in Sturm – "Wenger-Alpe, Canton Bern". (Note 7)
1805 *Lacerta crocea* Wolf in Sturm – "Hiesige Gegend". (Note 8)
1808 *Lacerta fragilis* Palmstruch & Swartz (Note 9)
1820 *Lac. unicolor* Kuhl – "Vaterland ?" (Note 10)
1820 *Lac. ptychodes* Kuhl – "Vaterland?". (Note 11)
1820 *Lacerta ptychodes* Merrem – "Habitat…". (Note 11)
1820 *Lacerta pyrrhogaster* Merrem – "Deutschland". (Note 12)
1823 "*Lac. vivipara* Jaquin" (sic!), Lichtenstein. (Note 3)
1829 *Lacerta schreibersiana* Milne Edwards – "Envoyés de Vienne". (Note 13)
1832 *Lacerta Schreibersiana* var. a. *fusca* Gachet (p. 238) – "Environs de Bordeaux" (Note 13a)
1832 *Lacerta Schreibersiana* var. b. *lutea* Gachet (p. 239) – "Environs de Bordeaux (dans une prairie humide)" (Note 13a)
1832 *Lacerta chrysogastra* Andrzejowski – "In vallibus circa Cremenecum". (Note 14)
1835 *Lacerta de jacquin* Cocteau – "(nova acta Helvetica 1787, page 33 Icon tab. 1)" (Note 15)
1835 *Lacerta guérin* Cocteau – "La Forêt d'Eu". (Note 16)

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1837 *Zootoca montana* Tschudi – "Wahrscheinlich das seltenste schweizerische Reptil... Gebirgsbewohnerin". (Note 17)
1837 *Zootoca alpina* Tschudi – "Schweiz". (Note 18)
1840 "Lacerta isidori *Geoffr.*" (sic!), Schinz (Note 19)
1872 *Lacerta vivipara* var. *pallida* Fatio "Cà et là dans nos Alpes et dans le Jura". (Note 20)
1897 *Lacerta vivipara* var. *carniolica* Werner – Krain (Schneeberg). (Note 21)
1898 *Lacerta (Zootoca) vivipara* var. *melanogastra* Prazák – "Leitomyschl, Carlsbad ", Böhmen (Note 22)
1902 *Lacerta vivipara* var. *barabensis* Kashchenko – "Barab", near Tomsk (Note 23)
1923 *Lacerta vivipara* var. *gedulyi* Fejerváryi – "Felsö-Babad, commune Ocsa, dép. Pest" (Note 24)
1963 *Lacerta vivipara sachalinensis* Pereljeshin & Terentjev – Type locality not given, but by implication Sakhalin Island. (Note 25)
1968 *Lacerta vivipara pannonica* Lác & Kluch – "Bot'any, Kapushanský Wald" (Note 26)
2000 *Zootoca vivipara carniolica* Mayer, Böhme, Tiedemann & Bischoff – "Slovenia: Mt. Sneznik: 8 km SE Masun village, 1250 m a.s.l.". (Note 21)
2009 *Zootoca vivipara louislantzi* Arribas – "Pla de Beret (Vall d'Arán, Lleida). Spain" (Note 27)

II. Notes

1. *Zootoca* Wagler, 1830

Lacerta vivipara is the type species of *Zootoca* Wagler, 1830 (see Stejneger 1907: 251); the later determination of *Zootoca crocea* by Fitzinger (1843: 20) is irrelevant, since the type determination had been carried out by Wagler (1830: 155) himself (by monotypy; Article 68.3 of the Code). Wagler listed indeed *Lacerta crocea* beside other nomina, but they have been added in brackets just behind *Lacerta vivipara*. According to Wagler's handling, these nomina are deemed synonyms. *Zootoca* was re-elevated to full generic rank by Mayer & Bischoff (1996).

In addition, Wagler (1830) provided also the basis for the modern generic and specific systematic concept and the current nomenclature of European lizards, next to *Z. vivipara* also for e.g. *Lacerta agilis* and *Podarcis muralis*, although his generic concept was widely accepted much later, since the early 1990s (see Schmidtler 2010: fig. 1).

2. *Seps? atra* Schrank in Schrank & Moll, 1785
(Fig. 1)

Even if seen on the background of former contemporary practices, the original description appears highly strange. It corresponds only to a sight record of several seconds (see text in fig. 1) on occasion of Schrank's excursion to Mount Schwarzort near Berchtesgaden (then a clerical principality immediate to the so called Old German Empire; now situated in southeastern Bavaria). The identification as a viviparous lizard is nonetheless obvious: Schrank was a good adept of the local herpetofauna which he registered in the same work in his "20. Brief über Berchtesgaden" (1785b). The simultaneous and progressive use of Laurenti's (1768) new generic and specific names for the species observed by Schrank himself in this territory demonstrates well that he was able to differentiate between lizards and salamanders: *Proteus tritonius* (the larvae of the Alpine newt, now *Ichthyosaura alpestris*; see Schmidtler 2007), *Salamandra atra*, *Salamandra maculosa*, *Seps viridis* (here probably the male of the sand lizard, *Lacerta agilis*) beside "*Seps? atra*"). A certain unsureness concerning the genus is mirrored by the question mark behind Laurenti's new generic name *Seps* for lizards. In the case at hand the evidence of quickness, colouration, the long tail and the slender body are surely crucial. There may be added the ecological description of the Schwarzort mountain in the preceding "19. Brief" (Schrank 1785a) which is pointing to a typical alpine montane forest. According to our present knowledge this altitudinal belt in the Northern Calcareous Alps is characteristically inhabited by *Zootoca vivipara*. In the subsequent literature this taxon is apparently alluded only once, by Jäckel (1871: 85), who correctly related it to the melanistic *Lacerta nigra* Wolf (see below note 7).

Seps atra (grammatically and according to Art. 34.3 ICZN nomenclaturally correct, would be: "*Seps ater*"; *Seps* has, contrary to *Zootoca*, a male gender; cf. Laurenti, final sentence of the "Errata": „*Si Sepem inveneris in genere feminino lege masculinum*") is therefore the oldest available synonym in the genus *Zootoca*. It is however a "nomen oblitum" (compared with *vivipara*; see below note 3), but being available as a taxon of the species

§ 3. Schwarze Eidechſe? (Seps? atra.)

Ich habe dieſes Thier nicht hinlänglich geſehen; vielleicht war es ein ſchwarzer Molch; aber es war doch ſchnell, und der Schwanz ſchien mir viel dünner und länger als bey den Molchen, und der Körper ſchlanker.

Ich habe es in dem Walde unterm Schwarzorte auf einem faulen Baumſtocke geſehen, allein als ich es greifen wollte, war es weg, und nicht mehr zu finden.

Fig. 1. Text of the original description of *Seps atra* Schrank, 1785. For translation see Note 2.

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group, if the taxonomical distinctness of this Berchtesgaden taxon should emerge. (Art. 29 ICZN).

The translation of Schrank's figure legend (Fig. 1) is: *"53. Black lizard? (Seps? atra.). I did not see this lizard sufficiently; perhaps it was a black newt; but it was nonetheless quick, and the tail seemed to me much thinner and longer than in newts, and the body slimmer. I have seen it in the forest below of (Mt.) Schwarzort on a rotten tree trunk, however, when I wanted to catch it, it disappeared, and was not to be traced again."*

3. "*Lacerta vivipara*" Jaquin, 1787 and *Lacerta vivipara* Lichtenstein, 1823. (Fig. 2)

3.1. Only a "viviparous lizard" but not an original description.

As mentioned already in the introduction, J.F. de Jacquin (1787) entitled a short note as follows: „Lacerta vivipara, observatio Jos. Francisci de Jacquin". After having described the context of his discovery and the morphology of a female with its hatchlings born shortly after the capture, he stated that he would not dare to decide to which species this specimen could be assigned, He even consulted Linné's work in vain, who did also not seem to him to know much in terms of many other species of "our Austria". Thus the aforementioned caption should certainly not denote a new species but rather was intended as the scientific communication of a sensational biological anomaly, namely a "viviparous lizard" (Latin: "Lacerta vivipara") within the class of the "oviparous quadrupeds" - the present-day amphibians and reptiles (see Böhme & Rödder 2006; Schmidtler & Böhme 2006). Cocteau (1835; see note 14) was the first to spot these facts, but they were forgotten shortly after publication of his work. "*Lacerta vivipara* Jacquin, 1787" had therefore not become an available name (Art. 11.5 ICZN).

3.2. The search for the correct species name.

According to the principle of priority (Art. 23.3.5 ICZN), the name *vivipara* would generally have to be replaced by the next-oldest available synonym (see listing in chapter I). However, the principle of priority is not a value in its own, but it is a means to serve stability and universality of nomenclature (Preamble and Art. 23.2 ICZN). Therefore, names of long acceptance should not be invalidated but preserved if this can anyhow be achieved. This is particularly true for the name of such a famous and widespread species as in this case!

As far as noticeable for us, the name *Lacerta vivipara* was first used as a "real" species name – and also by referring to Jacquin – in Lichtenstein's (1823) catalogue (see fig. 3), which contains also many new species descriptions. From that time onwards (especially since Duméril & Bibron, 1839) this name became more and more in general use. The peculiarity here is that in this "Verzeichniss" by Lichtenstein 1823 the history of discovery and the description of "*Lac. vivipara*. Jaquin" (sic!) are treated in detail, but that this taxon was "only" ranked as a synonym under "14. *Lacerta muralis* Merr." (text under fig. 3). But, by virtue of the Articles 11.5, 11.6, 50.7 ICZN this fact is sufficient to make the name *Lacerta vivipara* from its type locality "Mons Schneeberg" (= Mt. Schneeberg, west of Vienna) available.

The older synonyms (between 1788 and 1820: *atra, oedura, nigra, crocea, montana* etc., see the synonymy list above) must not be considered as threatening the citation of *vivipara* by Lichtenstein (1823): None of them was used as a valid name after 1899 (Art. 23.9.1.1 ICZN), and it is no question here that *Lacerta vivipara* was validly used in at least 25 publications by at least 10 authors in the last 50 years (Art. 23.9.1.2 ICZN).

3.3 The correct authorship of Lacerta vivipara

"H. Lichtenstein" is headed on the title page of the "Verzeichniss" (1823), but this fact does not exclude a possible coauthorship of other persons for parts of the publication (Art. 50.1 ICZN). So, among others, Tschudi (1837: 29) had nominated "Schulze" (sic!) without any substantiation as a coauthor of the mentioned citation. This was apparently based on Lichtenstein's own statement on his introductory page IX: „*Damit ich mir nicht allein anzumaßen scheine, was Verdienstliches an dieser kleinen Arbeit sein mag, so darf ich nicht unerwähnt lassen, dass zwei meiner werthen Gehülfen, Herr Doctor Rödig, (jetzt Professor in Münster) und Herr Stud. Med. Ferd. Schultze von Halle an dem Verzeichniß der Amphibien und Fische einen wesentlichen Antheil haben. Namentlich sind die eingestreuten Bemerkungen über die variablen Eidechsen Arten und die Fassung der mehrsten Diagnosen in den letzten 4 Bogen ganz des letztern Werk, und von demselben während meiner Abwesenheit von hier, zum Druck befördert*" which reads in our translation: *„In order not to ascribe everything to myself what could be meritious in this small work, I may not leave it unmentioned that two of my estimated helpers, Dr. Rödig (now professor at Münster) and Mr. Stud . Med. Ferd(inand) Schultze of Halle have considerably participated in the list ("Verzeichniss") of amphibians and fishes. Particularly the dispersed comments on the variable lizard species and the version of most of the diagnoses in the last 4 sheets are completely the latter's work , and were also sent by bim to the printer during my absence."*

This highly precious and mannered information does not represent in itself a proof that F. Schultze really authored

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Fig. 2. "*Lacerta vivipara*" from de Jacquin (1787); adult female with its newborn offspring, from Schneeberg, west of Vienna. – Note 3.

4. *Lacertus cinereus* Lacepède, 1788 (Figs 4, 5).

4.1. A confusing collective species and an unavailable binomen.

This binominal taxon is mentioned by Lacépède (1788) only in his „Synopsis methodica quadrupedum oviparum" being adherent to his herpetological encyclopedia ("*L. cinereus*" under the caption "*Lacertus*"). Apart from that, Lacépède was always speaking of the "Lézard gris" (= Grey lizard; cf. also "*Lacertus cinereus*" and "Graue Eidechse" in Bechstein 1800: 537). However, *Lacertus cinereus* does not anymore figure in any contest with other available taxa, since Lacépède's new taxa in this first and not constantly binominal volume of his encyclopedia were declared as not available („Lacepède, B.G.É. de la V. 1788. *Histoire Naturelle de Quadrupèdes Ovipares*, and all subsequent editions of this work ruled to be not avail-

III. Amphibien. 93

Thlr.

Lac. vivipara. Jaquin. *)

Lac. collari integerrimo adnato, squamis dorsi et laterum laevibus sexangularibus, squ. caudae annulatim abscissis supra subcarinatis.

Os acutius quam in Lac. agili. Linn. Lac. stirpium. Daud.; *series scutorum abdominalium sex; pori femorales 17.* **) *In medio dorso linea interrupta punctorum nigrorum, sed saepius deest.*

Fig. 3. Excerpt from the description of *Lacerta vivipara* in Lichtenstein (1823) as a synonym under "14. Merr. *L. muralis*. p. 67" (preceding page 92). Below page number 93 see the price column with the abbreviation "Thlr" (=Thaler), at that time the Prussian currency. The publication of Lichtenstein (1823) belongs to an unusual and rare literary genre in which sales catalogue and zoological science are combined (see Junk, 1926–1936: 192, 198). Numerous animal species are described here under specification of the selling price per specimen. The explanations of the reptiles are at great length (see also Schmidtler 2004). – Note 3.

the citations on *Lacerta muralis* or *Lacerta vivipara*, respectively. Even the instance that F.S. Leuckart (see Leuckart 1841: 14, footnote 64) had discussed with F. Schultze on the viviparity of the viviparous lizard ("*L. crocea*"), cannot be used as an argument. Therefore, Lichtenstein, author of the "Verzeichniss (1823)", should be regarded also as the author of the taxonomic parts that deal with lacertids (Art. 50.1 ICZN).

We conclude that the correct scientific denomination of the viviparous lizard is now *Zootoca vivipara* (Lichtenstein, 1823).

able for nomenclatural purposes, and no name to acquire the status of availability by reason of having been published in any edition. Op. 2104"; see ICZN 1987, 2005).

4.2. Nonetheless: A key taxon important for the understanding of the history of systematics.

The story of *Lacertus cinereus* seems well appropriate to understand the hopeless confusion which arose at the end of the 18th century in the systematics of lizards (and not

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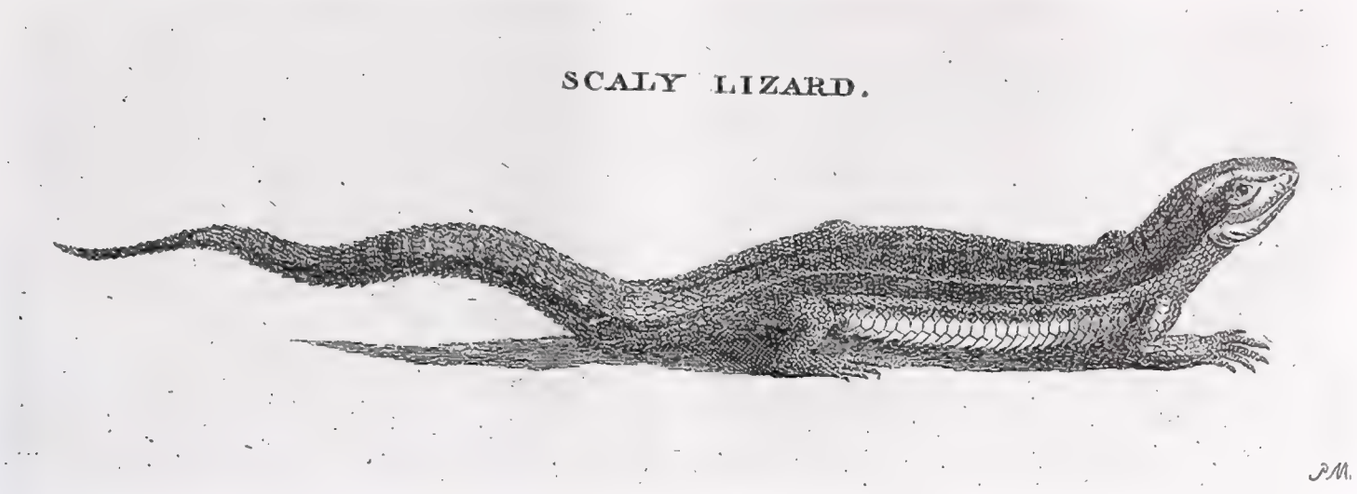

Fig. 4. The "Scaly lizard" from Pennant (1776) is a British *Zootoca vivipara* female. – Note 4.

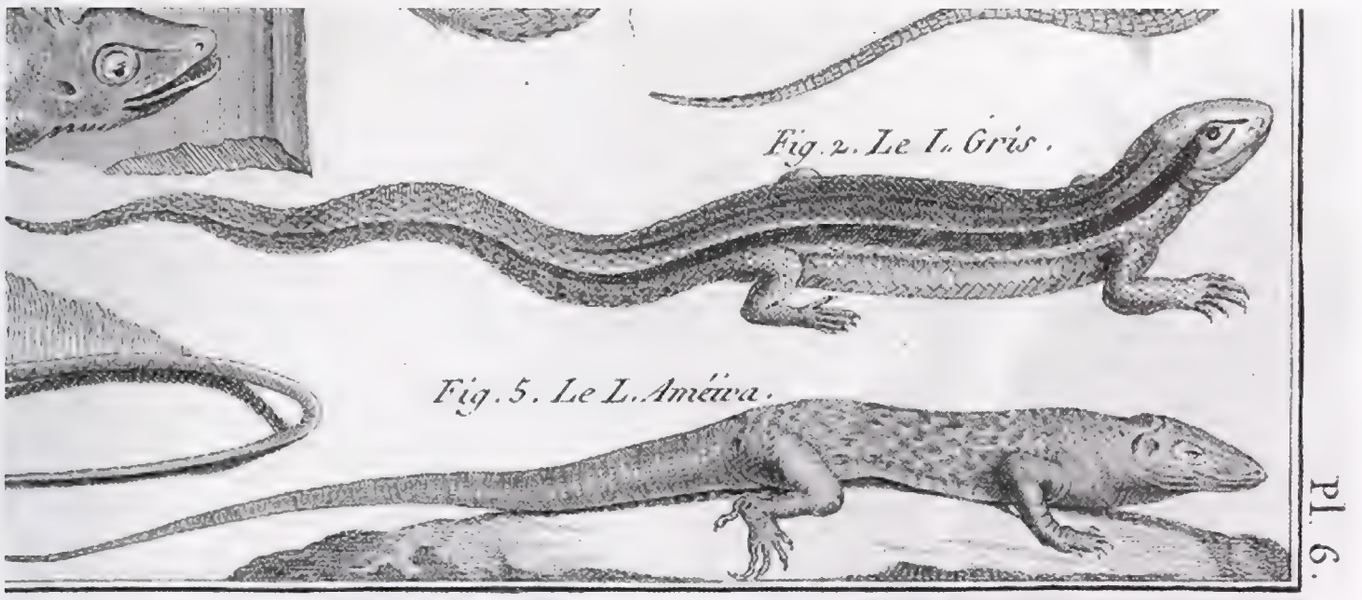

Fig. 5. Excerpt with "Lézard gris (*Lacerta agilis*)" from Bonnaterre (1789: 44 and pl. 6, fig. 2). This copy of Pennant's Scaly lizard (= *Zootoca vivipara*; see fig. 4) was intended to represent a current French *Podarcis muralis*. See some single falsifications because of this cribbing: The more reduced pileus scalation, the reduced spotting upon the dorsum and the even scalation of the tail compared with the verticillate and rugose formation of the original. – Note 4.

only in their systematics!). Here, Linnaeus (1758) and Lacépède (1788) may be characterised as "lumpers". In their species *Lacerta agilis* and *Lacertus cinereus* / Lézard gris there are comprised more or less clear at least the sand lizard (currently: *Lacerta agilis* Linnaeus), the green lizard (currently: *Lacerta viridis* Laurenti or *L bilineata*, Daudin), the wall lizard (currently: *Podarcis muralis* (Laurenti)), the viviparous lizard (currently: *Zootoca vivipara* (Lichtenstein) see the comprehensive discussion in Leydig (1881: 161)). Contrary to them, Laurenti (1768) and Daudin (1802) took the line of an extreme "splitting". They based new species upon juvenile forms, colour varieties, males and females (for details see: Dumeril & Bibron 1839, Schmidtler 2004, 2010, Kuzmin 2005: 242). It is noteworthy that *Zootoca vivipara* is not involved in this splitting bacchanal.

As indicated, *Lacertus cinereus* Lacépède (the male gender represents an unjustified emendation; cf. David & al. 2002: 24) comprises also *Zootoca vivipara*. This fact is less identifiable from the ambiguous morphological descriptions, but in fact from a publication on its viviparity, being published covertly (Lacépède 1789: 491, "Additions"), and forgotten later on. This citation worried Lacépède. He only found a way by speculating that the grey lizards could not help but the salamanders in fact could (then also in the Linnean genus *Lacerta*!), the fe-

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males of which are sometimes egg-laying and sometimes giving birth to living young. Observations like these began to shake systematics of that time. There intrinsically oviparous quadrupeds and snakes (both in the class of "amphibians") were facing the viviparous quadrupeds (mammals).

4.3. Problems of specific identification: Different in every country.

Ultimately Bell (1839: 22) hit the mark when discussing the use of the name "*Lacerta agilis*": „*...that the Linnean term agilis has been applied by zoologists of different countries to that species of Lizard which is best known or most common in their own. Thus the Podarcis muralis, the common lizard of Italy and of France, has been so called by Italian or French writers; and our own little indigenous species, so frequent in almost all parts of England, which I shall presently describe under its proper appellation of Zootoca vivipara, has hitherto received the same name from every British naturalist who has written on the subject*".

A good example is the unscrupulous cribbing of Pennant's "Scaly lizard" (1776: fig. 4 this paper; definitely the female of a British *Zootoca vivipara*) by Bonnaterre (1789; fig. 5 this paper), who believed it a (current) French *Podarcis muralis* but named it still *Lacerta agilis* ("Lézard gris")!

The fact that today the binomen "*Lacerta agilis*" is identified with the sand lizard and not with the viviparous lizard, depends lastly on Wolf in Sturm who had uncovered both taxa, living in Nuremberg, to be independent species and to describe and depict them elaborately (See Wolf in Sturm 1799: some coloured images of males and females of the sand lizard *Lacerta agilis*; depicted also by Schmidtler 2004. Wolf in Sturm 1805: below notes 6–8 and figs 6, 7 hoc loco). It was finally Wagler (1830; see note 1) who leveraged Wolf's nomenclatural classifications together with its basic systematical contents (see also Koch in Sturm 1828).

5. *Lacerta oedura* Sheppard, 1804

"At different times found in vast abundance": Sheppard offers no exact information on the geographical origin of his new species. However, it results from the caption and introduction of his article ("British lizards") that Britain has to be understood as type locality.

This taxon is cited by Tschudi (1837: 3) under the name "*Lacerta oedura* Scheppard" (sic!) and undergoes a further "mutation" in the paper by Schinz (1840: 19 as "*Lacerta aedura* Scheppert (sic! See fig. 10), a spelling which can be found again in some later references (Erber 1868).

By the way, Sheppard's article contains two further new "*Lacerta*" species: *Lacerta anguiformis* ("*An *Lacerta aquatica* Linn.?" = *Lissotriton vulgaris* ?) and *Lacerta maculata* (a younger homonym of both *Lacerta maculata* Shaw, 1802 (now: *Ambystoma maculatum*) und *Lacerta maculata* Daudin, 1802); the latter dubious taxon is apparently not enclosed in later synonymy listings.

6. *Lacerta montana* Mikan in Sturm, 1805 (Fig. 6)

The „Riesengebirge": This mountain range forms today the border between Poland and the Czech Republic. See also *Zootoca montana* Tschudi, 1837 (note 16).

See in detail Leydig (1881 : 166) who showed that Linnaeus (1758: 203 and 1766: 363) had lumped together at least the current species *Lacerta agilis* and *Zootoca vivipara* under the name *Lacerta agilis*. Wolf and Mikan were the first who partitioned the Linnean collective species *L. agilis* in the fourth issue of Sturm's "Deutschlands Fauna"(1805) The first important progress had been made by Wolf in the second issue of Sturm's work when he described and magnificently figured the male and the female of the current species *L. agilis* under this name (see also Schmidtler 2004). However, the current species *Z. vivipara* was introduced by Mikan and Wolf as no less than three different species see Note 7 & 8)! The mingling of the two species is still to be found as late as Brandt & Ratzeburg (1829) who reported under *L. agilis* also viviparous individuals. – For more details about the complex problems within collective species see note 4.

7. *Lacerta nigra* Wolf in Sturm, 1805 (Fig. 6)

The type locality is "Schneegebirge, so genannte Wenger-Alpe", in the canton of Berne, Switzerland. See also Tschudi (1837: tab. 1), who regarded this black variant as a variety of his *Zootoca montana* (note 16).

8. *Lacerta crocea* Wolf in Sturm, 1805 (Fig. 7)

Wolf wrote that he had received this lizard from "hiesiger Gegend" (= "local region") whereby he meant his habitation, the then Imperial City of Nuremberg (Nürnberg). This taxon was considered by Wagler (1830) as a synonym of *Zootoca vivipara* (cf. note 1 and Duméril & Bibron 1839), but nevertheless persisted in the literature some decades as an independent species.

The viviparous lizard was first depicted by Nikolaus M. Oppel (1782–1820) in a perfect manner (Schmidtler 2008: 22, fig. 12), but remained subsequently unpublished. This figure stimulated Leydig to a hymn of praise in his (1872: 224) historical chapter on "*Lacerta vivipara*".

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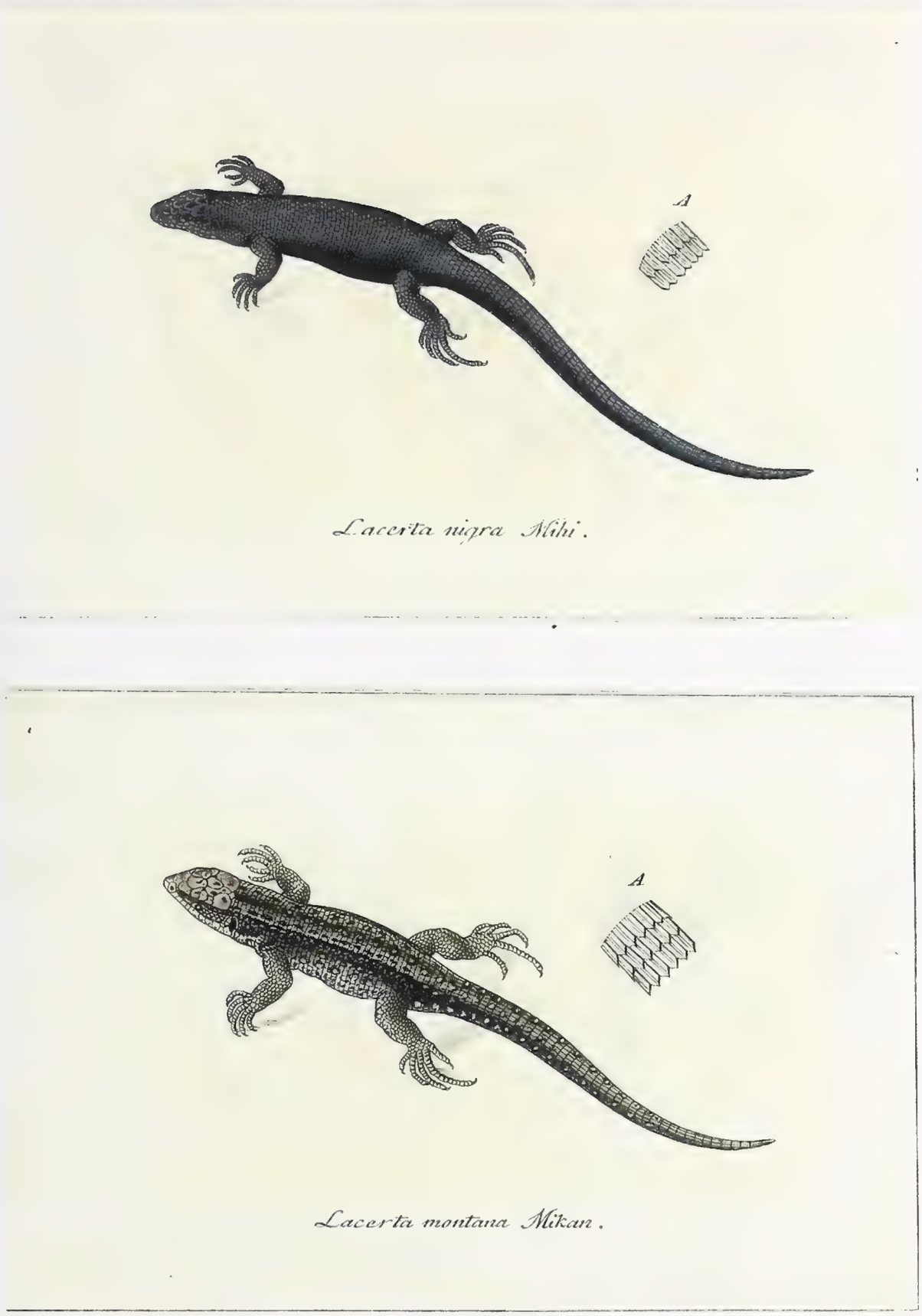

Fig. 6. "Iconotypes" of *Lacerta nigra* Wolf in Sturm, 1805 (above) and *Lacerta montana* Mikan in Sturm, 1805 (undesignated plates). – Notes 6 and 7.

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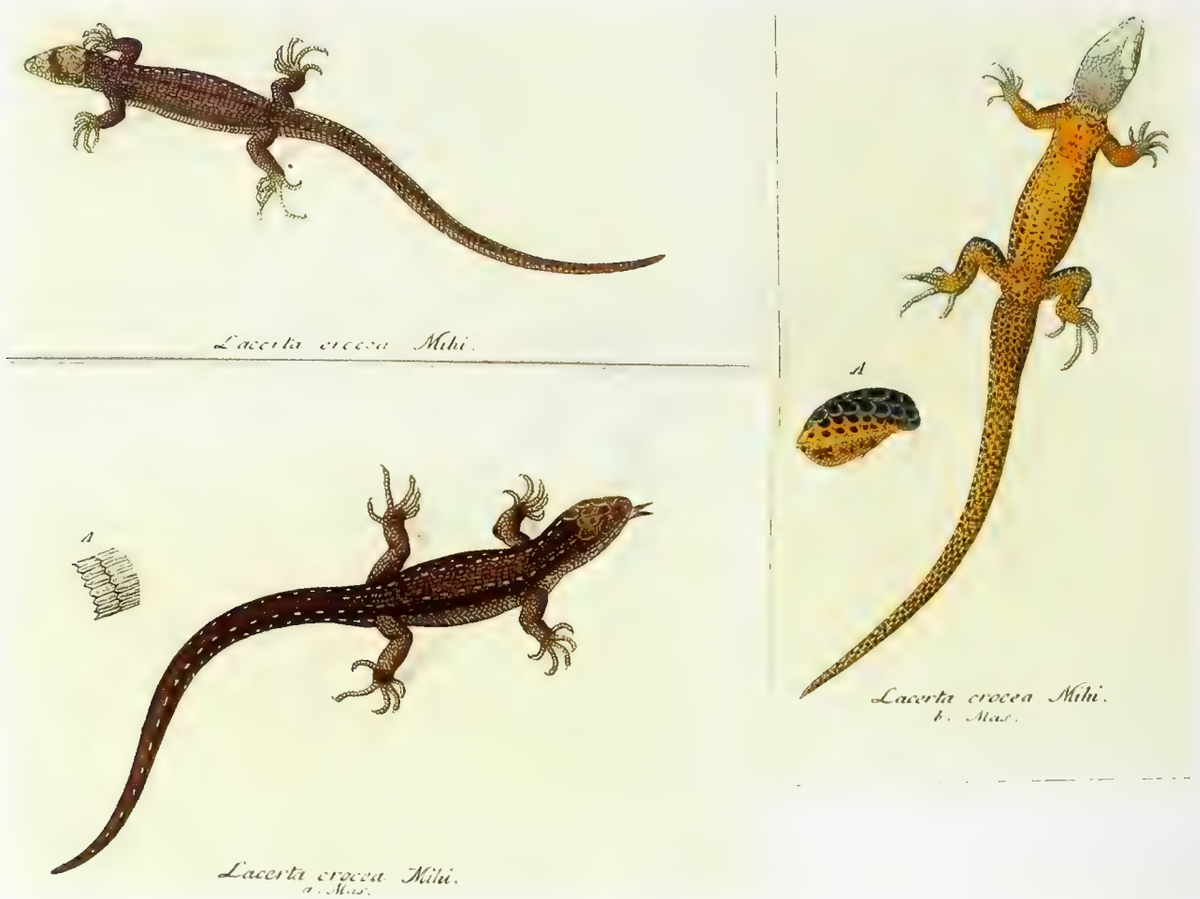

Fig. 7. Different specimens in different positions of *Lacerta crocea* Wolf in Sturm, 1805 (Undesignated plates; "iconotypes"). – Note 8.

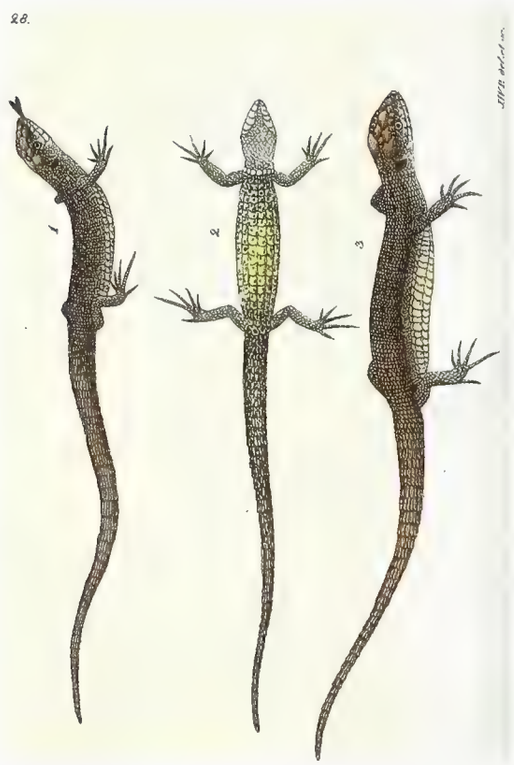

Fig. 8. *Lacerta agilis* resp. "*Lacerta fragilis*" from Palmstruch & Swartz (1808). – Note 9.

9. *Lacerta fragilis* Palmstruch & Swartz, 1808 (Fig. 8)

The name *Lacerta "fragilis"* turns up only in the "Systematiskt Register" at the end of volume I of "Svensk Zoologi". There is a hint to no. 27 (bearing the caption : "Grå Ödla *Lacerta agilis*… " in the first volume (part 5)) of this work. According to the main title page of « Svensk Zoologi" this work was founded in 1806 by C. Quensel and J.W. Palmstruch. After Quensel's death in 1806 it was continued by J.W. Palmstruch and O. Swartz as displayed upon a new title page having been sent by the editor with part six in 1808 (R. Wahlgren and B. Dal in litt. 2011).

According to the situation described above, this naming of "*Lacerta fragilis*" is therefore probably a lapsus. It refers indeed to the authors' "*Lacerta agilis*" (currently : *Zootoca vivipara*) , then the collective species first described by Linnaeus (1758; see also 1766 and Gmelin 1788: 1070; the latter reference being explicitely cited by the authors). Concerning this Linnean collective species "*Lacerta agilis*", more details can be found under note 4 and 6.

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10. *Lacerta unicolor* Kuhl, 1820

Origin and fate of the holotype are unknown. Wagler (1830: 155) quoted it under the comment "Männchen adult. decolor." in the list of his synonyms of *Zootoca vivipara*. Cocteau (1835: 10) assumed that Wagler might have examined this specimen since the original description was very enigmatic and highly insufficient ("à peu près énigmatique et au dessous de toute critique"). Kuhl's consideration beside the vacuous description is remarkable: that the shape and size resemble entirely *L. ptychodes* (see the following note 11). Subsequently *L. unicolor* was regardeded a dubious synonym of *Zootoca* respectively *Lacerta vivipara*, cf. Mertens & Wermuth 1960). According to Hildenhagen (in litt. 2011) the acronym "Icon O." applied here and in some other of Kuhl's species descriptions, means probably that no figure was available ("Icon: zero") .

11. *Lacerta ptychodes* Kuhl, 1820 („mihi") and Lacerta ptychodes Merrem, 1820

It seems to be intriguing that in 1820 the same specimen of unknown origin was documented with the same name by two different authors independently from each other. Indeed, Kuhl (1820: 121) mentioned an earlier contact with Merrem because of this specimen, but both articles reveal in each case that the original descriptions were authored without any reference whatsoever. Both descriptions are comparatively comprehensive, in which Kuhl accentuated the colour pattern and Merrem the pholidosis (Merrem : die" runzelige Eidechse" = "rugose lizard"). In both cases, *Zootoca vivipara* might have been hold very well. In the later literature a lizard named *Lacerta ptychodes* did never appear again. (see also Hildenhagen 2010: 53 and Hildenhagen & Hallermann 2010: 61) .

12. *Lacerta pyrrhogaster* Merrem, 1820

Tschudi (1837: 27) apparently interpreted Merrem's species name "*pyrrhogaster*" as an adjective and therefore adapted the ending to feminine gender (*Zootoca pyrrhogastra*"). He interpreted *Zootoca* as a subgenus comprising two species: *Z. pyrrhogastra* and "*Z. montana* nobis" (see note 16).

Tschudi's footnote on page 30 reveals that the principles of priority and a common authoritative terminology were not yet comprised in the then usual understanding of nomenclature: „*Zootoca pyrrhogastra* schien mir der passendste Name für diese Gattung des Wagler'schen Genus *Zootoca*, da es die Färbung (= "feuerbauchig", Anm. d. Verf.) genau kennzeichnet. *Zootoca vivipara* ist Unsinn, da beide Namen das Gleiche bedeuten" (translated: *Zootoca pyrrhogastra* seemed to be the most adequate name for this genus (meant is species) of Wagler's genus *Zootoca*, because it characterizes exactly the coloration (pyrrhogaster = "fire bellied"). *Zootoca vivipara* is nonsense since both names are meaning the same"). See also note 19.

13. *Lacerta schreibersiana* Milne Edwards, 1829

"Envoyés de Vienne… par M. Schreibers" (see Milne Edwards 1829: pl. 5, fig. 5.): Carl Franz Anton Ritter von Schreibers (1775–1852) was then director of the Vienna „Naturalienkabinette". The specimens were „sent from Vienna" by him. This wording does not necessarily mean that the specimens were also collected in or near Vienna. According to our present knowledge the viviparous lizard does not occur today in the immediate vicinity of Vienna but has few relict populations in the Viennese Basin (Cabela et al. 2001).

13a *Lacerta Schreibersiana* var. a. *fusca* Gachet, 1832 (p. 238) and *Lacerta Schreibersiana* var. b. *lutea* Gachet, 1832 (p. 239)

Fusca and *lutea* are nomina oblita, but surprisingly not comprised in Duméril & Bibron (1839), and apparently for the last time mentioned by Lataste (1876 : p. 82 + footnote). Gachet's *fusca* represents also a younger homonym of *Lacerta fusca* Daudin 1802 (nomen substitutum pro *Seps terrestris* Laurenti 1768 = *Lacerta viridis viridis* Laurenti). On the other hand *lutea* is an available name endangering *Zootoca vivipara louislantzi* Arribas, 2009. The description of *lutea* is very detailed but does not seem to be absolutely certain in order to ascertain synonymy (Arribas in litt. 2010). Further investigations are necessary.

14. *Lacerta chrysogastra* Andrzejowski, 1832

"In vallibus circa Cremenecum" (Latin): "The valleys around Cremenecum". Cremenecum is today Cremeniec, a city situated 100 km East of Lemberg (= Lwiw, Ukraine).

15. *Lacerta dejacquin* Cocteau, 1835

Cocteau's quotation of de Jacquin's article suggests an original description with a new name but is rather a replacement name, at least with respect to *Lacerta vivipara* Lichtenstein, 1823 with the same type locality "Schneeberg". From his point of view Jacquin's publication in 1787 did not constitute a valid description of a new species (so explicitely upon his page (6; not paginated).

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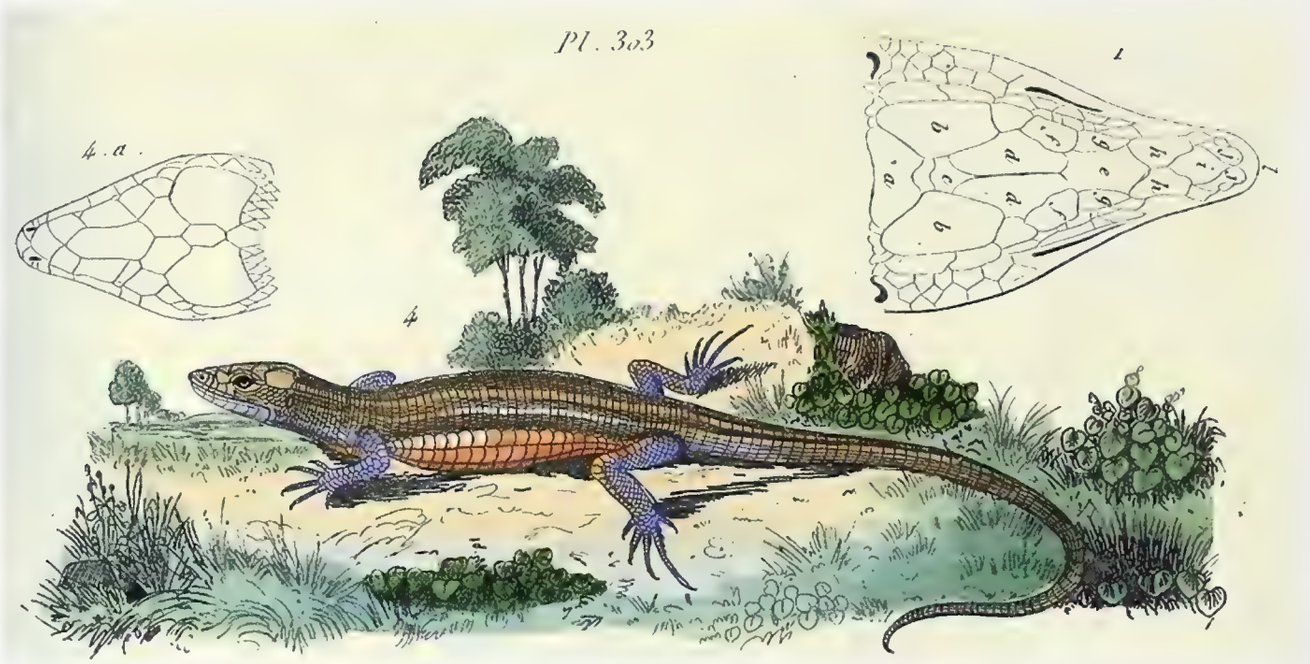

Fig. 9. *Lacerta guerin* Cocteau, 1835. Excerpt from Meunier in Guérin (1836: pl. 303 above; partial copy of the original figure in Cocteau). Left: pileus of *L. guerin*; right: for comparison the pileus of *L .ocellata* (currently *Timon lepidus*). – Note 16.

Cocteau classified both his new species, *Lacerta de jacquin* (to be quoted as "*Lacerta dejaquin*" according to the Code) and *Lacerta guérin* (note 16) under the "genre *Zootoca*", corresponding to a subgeneric allocation in its present sense.

Lacerta dejaquin and *Lacerta guérin* (see note 16) were cited in Duméril & Bibron's comprehensive Erpétologie générale under « *Lacerta vivipara* Jacquin » only with respect to their viviparity; but Cocteau's nomenclatural and systematical conclusions were completely omitted in this reference. Subsequently the authority of the famous "Erpétologie Générale" assisted that the taxon "*Lacerta vivipara*" obtained general acknowledgement (cf. also note 4.3).

16. *Lacerta guérin* Cocteau, 1835 (Fig. 9)

The collection originates from Forêt d'Eu (type locality), situated in the French Département Seine-Maritime, Haute Normandie. The general distribution of *Lacerta guérin* (to be quoted as *Lacerta guerin* without accent; according to the Code) is given as "Hab. In pratosis Europae centralis" (= lives in meadows of Central Europe). Cocteau thought it to be different from *Lacerta dejacquin* (Note 15).

17. *Zootoca montana* Tschudi, 1837

"Wahrscheinlich das seltenste schweizerische Reptil… Gebirgsbewohnerin". (= "Probably the rarest Swiss reptile… inhabitant of mountains")

The caption on p. 31: "2. Species. *Zootoca montana* nob." indicates an original description. However the wording with his confusing terminology („Synonyma: *Lacerta montana*, Mikan in Sturm's Deutschlands Fauna…"; cf. also note 11) urges rather the supposition that Tschudi did not intend to describe a new species here beside Mikan's taxon (see also note 6 and Duméril & Bibron 1839: 210, footnote 1).

18. *Zootoca alpina* Tschudi, 1837

In his chapter on *Zootoca montana* (p. 33) Tschudi advances his opinion that Switzerland is inhabited by a third species, „namely a *Zootoca alpina*". There is however lacking any description so that it has to be regarded as a „Nomen nudum".

19. "*Lacerta isidori* Geoffr." (sic!), Schinz, 1840 (Fig. 10)

This taxon being understood as a synonym of *Lacerta pyrrhogastra* (note 12) by Schinz (1840) was derived and misspelled from Tschudi's (1837: 31) : "*Lacerta Isidore* Geoffroy Saint-Hilaire *pull.* ?" (sic !). It is among others later on mentioned by Bedriaga (1886 : 330) under (*Lacerta*) "*Isidori* Geoffroy St. Hilaire" (sic!).

The origin of Tschudi's taxon could not be verified. Tschudi refers here apparently to the first name of Geoffroy Saint-Hilaire (son : Isidore; father : Ètienne), both having worked together herpetologically in the "Déscription

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Rothbäuchige Eidechse. Lacerta pyrrhogastra.

Zootoca pyrrhogastra *Wagler* et *Tschudy*. Lacerta vivipara *Jaquin*. Lacerta crocea *Sturm* Fauna. Lacerta unicolor *Kuhl*. Lacerta aedura *Scheppert*. Lacerta Isidori *Geoffr*. Lacerta guerini coccteau.

Fig. 10. Synonymy list of Schinz (1840: 19) exhibiting some negligent and extremely curious citations: On "Lacerta aedura *Scheppert*" see under note 5; on "Lacerta Isidori *Geoffr.*" see under note 19.

de l'Égypte" (1827/1829). The misspelling of "*Isidore*" in italics may have pretended here a species description by Tschudi.

See also under chapter 5 on a further extremely curious confusion by Schinz (1840: 19).

20. *Lacerta vivipara* var. pallida Fatio, 1872

Fatio (1872: 88) described here a pale colour variety which came across to him in „our" (Swiss) Alps and in the Jura mountains.

21. *Lacerta vivipara* var. *carniolica* Werner, 1897 and *Zootoca vivipara carniolica* Mayer, Böhme, Tiedemann & Bischoff, 2000

According to Mayer et al. (2000) *Lacerta vivipara* var. *carniolica* Werner, 1987 is a "nomen nudum". The similar origin and identical name of their new taxon were intended like that by them. This egg-laying subspecies is mainly distributed in the Southeastern Alps. A molecular study carried out at a parapatric suture of oviparous *carniolica* and live-bearing *vivipara* in Carinthia revealed reduced gene flow between both which can be interpreted as an incipient speciation event (Lindtke et al. 2010).

22. *Lacerta (Zootoca)* var. *melanogastra* Prazák, 1898

According to Litvinchuk & Borkin (2009: 227), earlier papers, viz. a catalogue of the vertebrates of Bohemia (1893) with some additions (1894) by the same author do not fullfill the requirements of formal taxonomic publications, so that 1898 has to be considered as the valid publication date of Prazák's "variety"names, among them also *melanogastra*.

23. *Lacerta vivipara* var. *barabensis* Kashchenko, 1902

This taxon, cited as a synonym by Nikolsky (1918: 317, see also Kuzmin & Semjonov 2006), has been named and described by Kashchenko (1902) on the basis of morphometric comparisons which makes this name clearly available.

24. *Lacerta vivipara* var. *Gedulyi* Fejerváry, 1923

This form which occurs in some isolates of the Great Hungarian Plain had been briefly dealt with by Geduly (1923) who stressed the peculiarity of its occurrence – despite the southern latitude - in lowland habitats. Fejerváry (1923) created this patronym despite his own statement that this form is not sufficiently distinct ("*In case that future research on more material will allow me to change my opinion about this topic I would wish to name this form var. Gedulyi, in honour of my friend Prof. Geduly who had discovered it*": our translation). Because published before 1960 *gedulyi* is not unavailable because of its clearly conditional erection, but, as a diagnosis is lacking and even, as explicitly stated, is non-exisent, this name should be also considered as a "nomen nudum".

25. *Lacerta vivipara sachalinensis* Pereljeshin & Terentjev, 1963

Described by its authors on the basis of morphometric comparisons which were, however, at the same time identified as clinal variations, Kuzmin & Semjonov (2006) considered *sachalinensis* as a "nyeprigodnoye nazvaniye" (= a useless denomination) which is of course not a "nomen nudum". That's why we regard this name as available.

26. *Lacerta vivipara pannonica* Lác & Kluch, 1968

Based on morphometric comparisons, this nominal subspecies was originally described from the eastern Slovakian lowlands. Subsequently, the name *pannonica* was also applied to much more westernly distributed populations, e.g. the Neusiedlersee (Lake Neusiedl) area and the Viennese Basin (see Cabela et al. 2001 and references cited therein).

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27. *Zootoca vivipara louislantzi* Arribas, 2009

This recently described subspecies is restricted to the Cantabro-Pyrenean axis, coming down to sea level at the Biscayan coast, but is nonetheless isolated from the main range of the species. See Note 13a on possible synonymy.

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Remarks on the northeasternmost distribution of *Elgaria coerulea principis* Baird & Girard, 1852 (Squamata: Anguidae) in British Columbia

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Abstract. Although the Northwestern Alligator Lizard (Squamata: Anguidae: *Elgaria coerulea principis*) is the most widespread lizard in British Columbia (Canada), its northeasternmost population seems to have been overseen in recent years. Based on own data and summarizing published and unpublished reports, we recognized this species from the city of Revelstoke and its southern and northeastern adjacent areas.

Key words. Anguidae, Canada, *Elgaria coerulea principis*, geographic distribution, Northwestern Alligator Lizard, Revelstoke.

Only four lizard species are known to occur in the Canadian province of British Columbia (BC). These are the three native ones, *Phrynosoma douglassii* (Bell, 1828) (Phrynosomatidae), *Plestiodon skiltonianus* Baird & Girard, 1852 (Scincidae), and *Elgaria coerulea* (Wiegmann, 1828) (Anguidae), as well as the invasive *Podarcis muralis* (Laurenti, 1768) (Lacertidae). Of these, *E. coerulea* is by far the most common and widespread lizard found in the province and is exclusively represented by its subspecies *E. c. principis* Baird & Girard, 1852, the Northwestern Alligator Lizard (Nussbaum et al. 1983; Matsuda et al. 2006). It can be distinguished from the other species inhabiting BC by its slender brownish body with rather inconspicuous dark markings and by a mid-lateral band of small scales between the larger dorsal and ventral scales (Matsuda et al. 2006). The diurnal alligator lizard is relatively small (snout-vent length usually less than 100 mm) and viviparous, life history traits commonly found in lizards at these latitudes in continental North America (Vitt 1973; Powell & Russell 2007).

While *E. c. principis* is the most widespread subspecies of *E. coerulea* and has its main distribution in BC and in the northwestern United States (Idaho, Montana, Oregon and Washington, extreme northern California), other subspecies range southwards to central California and Nevada (Smith 1946; Nussbaum et al. 1983). In BC, they are supposed to inhabit a narrow belt in the southern part of the province except for the very southeastern parts. Their northernmost occurrence has been reported from the area around Clearwater within central BC, and near Stuie in coastal BC, while the southeasternmost records are from Creston (Seburn & Brooks 2007).

On September 25, 2009 we observed a specimen of the Northwestern Alligator Lizard within the city limits of Revelstoke (Fig. 1). It was found in a backyard (400 Second Street West, Revelstoke, British Columbia, V0E 2S0, Canada), approximately at 51°0'0.68" N, 118°11'56.01" W. The individual was observed, identified and photographed, but was not collected as no permit was available during the encounter.

According to the most recent comprehensive account of this species (Matsuda et al. 2006), the closest known occurrences, in relation to our present record, are those around Sicamous and Kaslo. These localities have already been mentioned by Van Denburgh (1922) and are approximately 60 km west and 130 km south of Revelstoke respectively (Fig. 2). Similarly, the official online database for BC reptiles (Anonymous 2011) gives an estimated range of *E. c. principis* that more or less matches the reference points provided by Matsuda et al. (2006) (Fig. 2). However, a much older account on the reptiles of the Northwest Pacific by Nussbaum et al. (1983) reports *E. c. principis* from around Revelstoke. Furthermore, an unpublished pamphlet distributed locally in that area (FMRG no year), indicates that *E. coerulea* is a year-round resident known from Mount Revelstoke Park and Glacier National Park. Both parks extend in total about 75 km further northeast than the city of Revelstoke. In this regard it may be worth mentioning that the FMRG list focuses exclusively on the area within the national parks. *Chrysemys picta* (Schneider, 1783) (Emydidae), for instance, is listed with the remark that it is not actually known from the parks themselves but is commonly only found along the Columbia River near Revelstoke. Another recent, but unfortunately again unpublished report by a local hydroelectric utility mentions specimens of *E. coerulea* from the eastern shore of the Arrow Lakes Reservoir which is located a few km south of the city of Revelstoke (Hawkes & Tuttle 2010).

As a consequence, the range of *E. c. principis* certainly reaches several kilometer more northeasternwards than it is currently assumed (Fig. 2). The fact that *E. c. prin-*

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Fig. 1. The specimen of *Elgaria coerulea principis* (alive, not collected) encountered in Revelstoke (British Columbia, Canada) on September 25, 2009. Photograph: Kerstin Graba.

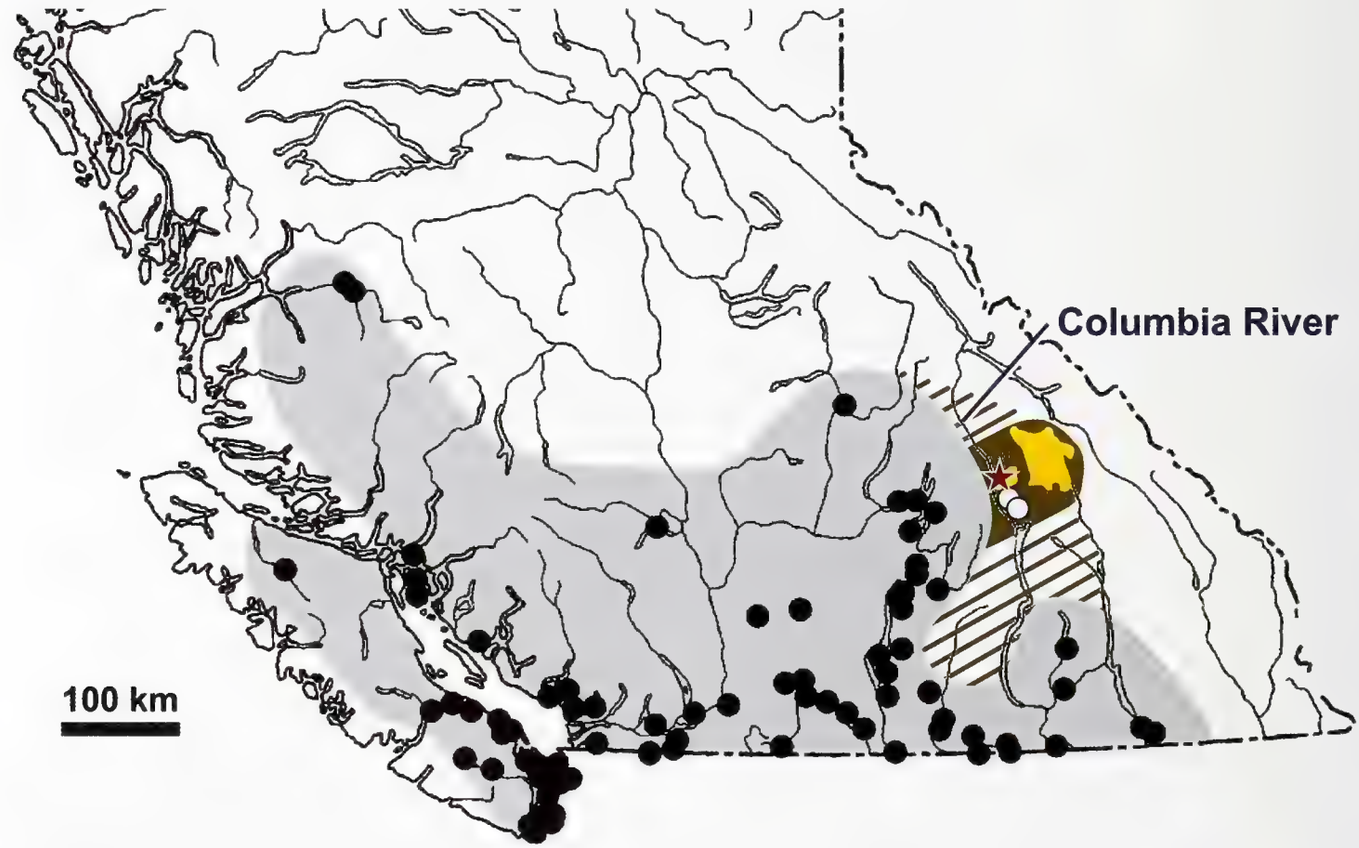

Fig. 2. Map of southern British Columbia (Canada) with known occurrences (black dots) of *Elgaria coerulea principis* (see Matsuda et al. 2006) and a recent estimation of its range (gray area, see Anonymous 2011). Note that the records from Revelstoke (red star, present report and from Nussbaum et al. 1983), those from Mount Revelstoke and Glacier National Parks (yellow area, FMRG no year) and also those from the Arrow Lakes Reservoir (white circles, Hawkes & Tuttle 2010) are all located east of the Columbia River. The therefore confirmed range extension is indicated by the brown area and our hypothesized possible range extension is indicated by the brown hatched area.

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cipis has been reported to be very sedentary, meaning that even roads (Rutherford & Gregory 2003) and small rivers (Stewart 1985) can act as effective barriers between populations, may have further implications: Revelstoke, both national parks and the localities where alligator lizards were found along the Arrow Lakes Reservoir are located on the eastern side of the Columbia River. The Columbia River is the largest river flowing to the Pacific in North America and in BC its main course flows almost in a straight line from Revelstoke south towards the Unites States (Stanford et al. 2010). Consequently, it probably represents an insurmountable barrier for these lizards. A possible scenario is that *E. c. principis* inhabits the areas along the eastern streambank of the Columbia River which are north of those near Kaslo, reaching at least Revelstoke and the two mentioned national parks in the North (Fig. 2). Another interesting fact is that the Illecillewaet River (in a more or less parallel and neighboring manner with the Trans-Canada Highway) flows from the northeast of Glacier National Park southwest until it reaches Revelstoke and joins the Columbia River (Mussio & Mussio 2011). Most of the area of Glacier and Mount Revelstoke National Parks, as well as the locality in Revelstoke in which we found the alligator lizard, are north relative to this potential Illecillewaet River barrier. The specimens from the Arrow Lakes Reservoir, however, were found south of it, making two distinct populations of the Northwestern Alligator Lizard at its northeasternmost range possible. However, more sampling and, ideally, studies on population genetics are urgently needed to test these latter hypotheses.

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Bonn zoological Bulletin (BzB)

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Scope

The **Bonn zoological Bulletin** (BzB), formerly "Bonner zoologische Beiträge", is an international, peer-reviewed, open access journal publishing original research articles, reviews, and scientific notes dealing with organismal zoology. Focus of the BzB are (1) taxonomy, (2) systematics and evolution, and (3) biodiversity and biogeography, all with respect to terrestrial animals. Terrestrial animals as understood here include those inhabiting fresh or brackish waters. Contributions from related fields like ecology, morphology, anatomy, physiology or behaviour are welcome when of clear relevance to the focus topics.

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Research articles: Manuscript preparation and submission

Manuscripts should be written in English. For serving readers from the organism's country of origin, bilingual abstracts are welcome. If you plan to submit a manuscript of more than 50 manuscript pages, please contact the editor-in-chief in advance. Please submit your manuscript as electronic file (see paragraph on electronic submission below). Manuscripts should strictly follow the instructions specified below. Manuscripts not compatible with these guidelines will not be taken into consideration.

Format Typing should be double-spaced in 12 pt throughout the text, including tables, figure legends, and reference list. Pages and lines should be numbered consecutively. Short subheadings may structure the text into sections. Do not number headings or subheadings.

Structure Research articles should be organized as follows: Title, Author(s), Address(es) including email address and telephone, Abstract, Key words, Running Title, Introduction, Material and Methods, Results, Discussion (or combined Results and Discussion), Conclusions (optional), Acknowledgements, References, Tables, Figure Captions, Figures (separately numbered and identified), Appendices (if necessary). Footnotes should not be used except in Tables.

Title The title should be brief (30 words limit, ideally shorter) and indicate clearly the field of study and group of animals investigated. The systematic position of taxa listed in the title must be indicated (e.g. "Squamata: Colubridae"). A Running Title (maximum 45 characters inclusive of spaces) should describe the paper's core topic.

Abstract Each manuscript should contain a concise abstract as single paragraph (max. 200 words) summarizing the significant findings, followed by not more than six key words.

References In the text, cited sources should be referred to as follows: Ax (2001), Kim & Lumaret (1989), Holm et al. (1997) – for three or more authors, or, if cited consecutively: (Ax 2001, 2002; Holm et al. 1997; Kim & Lumaret 1989) – please follow exactly the use of commas and semicolons. Do not use commas between author and year (only exception: taxonomic names, in which a comma is placed between author and year).

The list of references should be arranged alphabetically according to the surname of the first author; all authors should be included. Citations of two or more authors should be arranged alphabetically according to the first- and then the following author's surname. When more than one reference is given for a single author or the same combination of authors, these should be arranged chronologically. If citing more than one reference by the same author(s) published in the same year, use a, b, etc. after the year in both, text and reference list (e.g. 2006a, b). The names of journals in the References should be given in full. References "in press" shall only be cited when they have been accepted for publication. Examples of reference style are:

Kottelat M, Whitten T, Kartikasari SN, Wirjoatmodjo S (1993) Freshwater fishes of Western Indonesia and Sulawesi. Periplus Editions, Hong Kong

Mayr E (2000) The biological species concept. Pp. 17–29 in: Wheeler QD & Meier R (eds.) Species Concepts and Phylogenetic Theory – A Debate. Columbia University Press, New York

Parenti RP (2008) A phylogenetic analysis and taxonomic revision of ricefishes, *Oryzias* and relatives (Beloniformes, Adrianichthyidae). Zoological Journal of the Linnean Society 154: 494–610

Sullivan J (1994) *Bufo boreas*. In: Fire Effects Information System (U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory). Online at http://www.fs.fed.us/database/feis/animals/amphibian/bubo/all.html last accessed on December 28, 2009

Sztencel-Jablonka A, Jones G, Bogdanowicz W (2009) Skull morphology of two cryptic bat species: *Pipistrellus pipistrellus* and *P. pygmaeus* – a 3D geometric morphometrics approach with landmark reconstruction. Acta Chiropterologica 11: 113–126

Authors are kindly requested to make sure that sources listed in the References match those cited in the text. Names of persons who provided unpublished information should be cited by including the initial(s) and city as follows: "(JG Frommen, Bonn, pers. comm. 2009)".

Tables and Figures Tables and Figures should not duplicate information provided in the text. Tables should be numbered consecutively in Arabian numbers in order of their mention in the text (Table 1, Tables 1–3; do not abbreviate "Table(s)"). A brief self-explanatory title should be typed directly above each table, not on a separate page. Do not insert frames, vertical rules, dotted lines or footnotes. Figures (maps, graphs, charts, drawings, photographs etc.) must be numbered consecutively using Arabian numbers in order of their mention in the text (abbreviate "Fig. 1", "Figs 1–3" etc. in the text, but use the full term "Figure(s)" in the captions. If referring to illustrations in cited sources, use "fig. / figs". Grouped figures should be lettered with a lower case block letter in the lower left corner. Scale should be indicated on figures by a scale bar. A fully descriptive caption of each figure should contain all relevant information; captions are to be typed together on a separate page. Colour figures will be published free of charge if contributing significantly to quality and / or readability of the manuscript. The decision to print in colour or black and white any figure submitted in colour will generally be based on the referee's and handling editor's recommendations, but remains with the editor-in-chief and publisher. If appropriate, authors may be asked to group single colour figures into plates. For review, tables and figures should be enclosed to text (preferable one electronic file per manuscript), but may alternatively also be submitted as separate files (jpg, pdf, tiff). At this stage, illustrations of low resolution allowing the referees to follow the contents are sufficient; high-resolution files (jpg, pdf, tiff of photographs, maps etc. at ≥ 300 dpi; line artwork etc. at 600 dpi or in eps format) will be requested after acceptance. Unless otherwise agreed with the editor, single electronic submissions should not exceed 6 MB file size.

Appendix Appendices should be numbered consecutively in Roman numbers, in order of their mention in the text (Appendix I, Appendices I–VI).

Abbreviations Except of very common abbreviations such as mm, kg etc.; all abbreviations should be explained in the Methods section or figure legend if appropriate. Hyphenation or upper case letters for entire words are not permitted. All measurements must be metric units and given to the same decimal, i.e., 5.3–6.0 mm (not: 5.3–6 mm).

Taxonomy Names of animals and the description of new genera or species must follow the current version of the International Code of Zoological Nomenclature (ICZN, available at http://www.iczn.org/iczn/index.jsp). Type specimens should be deposited in recognised institutions; deposition at ZFMK is highly appreciated. Italics are required for species names which are written in full the first time they appear in the text, e.g. *Carassius auratus* (Linnaeus, 1758), but abbreviated at subsequent mention, e.g. *C. auratus*. List names in synonymies as follows: *Attelabus asparagi* Scopoli, 1763 (Scopoli 1763: 36, fig. 113.), and list the source under References. Dichotomous keys are desirable in taxonomic papers.

Statistics Statistics presented should include the name of the test, number of observations or degree of freedom, and probability level ($P > 0.05$, $P < 0.05$, $P > 0.001$, $P < 0.001$). Values of test statistics are not required.

Scientific Notes

Notes should comply with the instructions given above, but have to be (1) confined to a single point or issue of progress, (2) must be short (typically no more than 3 printed pages including illustrations and references), and (3) do not include headings or subheadings. A brief abstract of no more than three lines is required.

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Reviews should be concise, critical and creative, seeking to summarize the state-of-the-art of complex topics, and stimulate debates and new research initiatives. Review papers should comply with the instructions for preparation of Research articles, with the exception that the main body of text may be structured as appropriate.

Electronic submission

Manuscripts should be submitted as text files (*.doc or *.rtf; *.pdf is welcome for the review process, but for production *.doc or *.rtf will be required) via e-mail (bzb.zfmk@uni-bonn.de) to the editor-in-chief. Alternatively, send a CD. If neither is possible for any reason, please contact the editor-in-chief. The file name must start with the submitting author's last name.

Review process

Each manuscript will be peer-reviewed, generally by two or more referees. Manuscripts should be submitted to the editor-in-chief, and will be handled by the editor dealing with the respective taxon or topic (see list of editors). Authors are encouraged to suggest potential referees for their manuscripts. Final acceptance for publication is in the responsibility of the editor-in-chief. This decision is mainly based on the referees' report and the handling editor's recommendation. Revised manuscripts received more than 6 months after the reviewers' comments had been sent will be treated as new submissions.

Ethical and legal aspects

Authors are obliged to state clearly that they followed the legal regulations and laws for the collection and ethical treatment of animals.

Publication and reprints

Manuscripts will be published online after acceptance as preprint version, which will be replaced by the final pdf after publication of the printed issue of BZB. The corresponding author must clearly state so if preprint online publication of is not desired. In that case, only title, authors and the information that this manuscript has been accepted for publication will be made available at that stage. Immediately after publication, the corresponding author will receive an e-mail containing the final pdf. On request (see order form submitted with page proofs), 25 reprints are supplied free of charge. Additional reprints may be purchased on the author's expense.

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3. Please grade originality, quality of data, quality of statistical analyses, and quality of interpretation on a scale from 1 = low to 5 = high.
4. Please grade clarity and quality of text, figures and tables from 1 = low to 5 = high.
5. Has the welfare of any experimental animals been adequately taken into account?
6. Does the title aptly and correctly describe the paper?
7. Does the abstract summarize only the significant findings?
8. Is the length of the paper appropriate?
9. Are all (colour) figures and tables necessary and appropriate?

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